Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.

4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Hays County WCID No.2									
3. Customer Name: Hays County WCID No.2						**4. Customer No.:** 601363419			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential				**8. Site (acres):**		89.59
9. Application Fee:	$6,500		**10. Permanent BMP(s):**				n/a		
11. SCS (Linear Ft.):	0		**12. AST/UST (No. Tanks):**				0		
13. County:	Hays		**14. Watershed:**				Bear Creek		

Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	__	__	__
Region (1 req.)	__	__	__
County(ies)	__	__	__
Groundwater Conservation District(s)	__Edwards Aquifer Authority __Barton Springs/ Edwards Aquifer _X_Hays Trinity __Plum Creek	__Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	__Austin __Buda _X_Dripping Springs __Kyle __Mountain City __San Marcos __Wimberley __Woodcreek	__Austin __Bee Cave __Pflugerville __Rollingwood __Round Rock __Sunset Valley __West Lake Hills	__Austin __Cedar Park __Florence __Georgetown __Jerrell __Leander __Liberty Hill __Pflugerville __Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	__	__	__	__	__
Region (1 req.)	__	__	__	__	__
County(ies)	__	__	__	__	__
Groundwater Conservation District(s)	__ Edwards Aquifer Authority __Trinity-Glen Rose	__Edwards Aquifer Authority	__Kinney	__EAA __Medina	__EAA __Uvalde
City(ies) Jurisdiction	__Castle Hills __Fair Oaks Ranch __Helotes __Hill Country Village __Hollywood Park __San Antonio (SAWS) __Shavano Park	__Bulverde __Fair Oaks Ranch __Garden Ridge __New Braunfels __Schertz	NA	__San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Lauren Barzilla, PE
Print Name of Customer/Authorized Agent
Signature of Customer/Authorized Agent — Date: 1/23/26

FOR TCEQ INTERNAL USE ONLY			
Date(s)Reviewed:		Date Administratively Complete:	
Received From:		Correct Number of Copies:	
Received By:		Distribution Date:	
EAPP File Number:		Complex:	
Admin. Review(s) (No.):		No. AR Rounds:	
Delinquent Fees (Y/N):		Review Time Spent:	
Lat./Long. Verified:		SOS Customer Verification:	
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):
Core Data Form Complete (Y/N):			Signed (Y/N):
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):

Contributing Zone Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

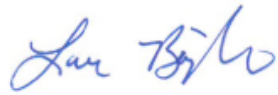
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Contributing Zone Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Lauren Barzilla

Date: 1/27/2026

Signature of Customer/Agent:



Regulated Entity Name: Hays County WCID No. 2

Project Information

1. County: Hays
2. Stream Basin: Bear Creek Watershet
3. Groundwater Conservation District (if applicable): Hays Trinity
4. Customer (Applicant):

   Contact Person: Samantha Bethke
   Entity: Hays County WCID No. 2
   Mailing Address: 600 W. 5th Street Suite 900
   City, State: Austin, TX Zip: 78701
   Telephone: 512-560-8135 Fax: n/a
   Email Address: sbethke@hayswcid.org

5. Agent/Representative (If any):

Contact Person: Lauren Barzilla
Entity: Burgess and Niple, Inc.
Mailing Address: 235 Ledge Stone Dr.
City, State: Austin, TX Zip: 78737
Telephone: 979-574-0905 Fax: n/a
Email Address: lauren.barzilla@burgessniple.com

6. Project Location:

☐ The project site is located inside the city limits of _____.
☒ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of Dripping Springs.
☐ The project site is not located within any city's limits or ETJ.

7. ☒ The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

The project is located on Mesa Verde Dr. appoximately 0.6 miles south of its intersection with Belterra Dr.

8. ☒ **Attachment A - Road Map**. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.

9. ☒ **Attachment B - USGS Quadrangle Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') is attached. The map(s) clearly show:

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).

10. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. The project description is consistent throughout the application and contains, at a minimum, the following details:

☒ Area of the site
☒ Offsite areas
☒ Impervious cover
☒ Permanent BMP(s)
☒ Proposed site use
☒ Site history
☒ Previous development
☒ Area(s) to be demolished

11. Existing project site conditions are noted below:

☐ Existing commercial site
☐ Existing industrial site

☐ Existing residential site
☐ Existing paved and/or unpaved roads
☒ Undeveloped (Cleared)
☐ Undeveloped (Undisturbed/Not cleared)
☐ Other: _____

12. The type of project is:

☐ Residential: # of Lots: _____
☐ Residential: # of Living Unit Equivalents: _____
☐ Commercial
☐ Industrial
☒ Other: Park and Trail

13. Total project area (size of site): 89.59 Acres

Total disturbed area: 3.35 Acres

14. Estimated projected population: 0

15. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	***Sq. Ft.***	***Sq. Ft./Acre***	***Acres***
Structures/Rooftops	0	÷ 43,560 =	0
Parking	0	÷ 43,560 =	0
Other paved surfaces	20,473	÷ 43,560 =	0.47
Total Impervious Cover	20,243	÷ 43,560 =	0.47

Total Impervious Cover 0.47 **÷ Total Acreage** 89.59 **X 100 =** 0.52**% Impervious Cover**

16. ☒ **Attachment D - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.

17. ☒ Only inert materials as defined by 30 TAC 330.2 will be used as fill material.

For Road Projects Only

Complete questions 18 - 23 if this application is exclusively for a road project.

☒ N/A

18. Type of project:

- ☐ TXDOT road project.
- ☐ County road or roads built to county specifications.
- ☐ City thoroughfare or roads to be dedicated to a municipality.
- ☐ Street or road providing access to private driveways.

19. Type of pavement or road surface to be used:

- ☐ Concrete
- ☐ Asphaltic concrete pavement
- ☐ Other: _____

20. Right of Way (R.O.W.):

Length of R.O.W.: _____ feet.
Width of R.O.W.: _____ feet.
L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

21. Pavement Area:

Length of pavement area: _____ feet.
Width of pavement area: _____ feet.
L x W = _____Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

22. ☐ A rest stop will be included in this project.

☐ A rest stop will not be included in this project.

23. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

24. ☒ **Attachment E - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

25. ☐ Wastewater is to be discharged in the contributing zone. Requirements under 30 TAC §213.6(c) relating to Wastewater Treatment and Disposal Systems have been satisfied.

☒ N/A

26. Wastewater will be disposed of by:

☐ On-Site Sewage Facility (OSSF/Septic Tank):

☐ **Attachment F - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.

☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☐ Sewage Collection System (Sewer Lines):
The sewage collection system will convey the wastewater to the _____ (name) Treatment Plant. The treatment facility is:

☐ Existing.
☐ Proposed.

☒ N/A

Permanent Aboveground Storage Tanks(ASTs) ≥ 500 Gallons

Complete questions 27 - 33 if this project includes the installation of AST(s) with volume(s) greater than or equal to 500 gallons.

☒N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			
4			
5			

Total x 1.5 = _____ Gallons

28. ☐ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than

one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

☐ **Attachment G - Alternative Secondary Containment Methods**. Alternative methods for providing secondary containment are proposed. Specifications showing equivalent protection for the Edwards Aquifer are attached.

29. Inside dimensions and capacity of containment structure(s):

Table 3 - Secondary Containment

Length (L)(Ft.)	*Width(W)(Ft.)*	*Height (H)(Ft.)*	*L x W x H = (Ft3)*	*Gallons*

Total: _____ Gallons

30. Piping:

☐ All piping, hoses, and dispensers will be located inside the containment structure.
☐ Some of the piping to dispensers or equipment will extend outside the containment structure.
☐ The piping will be aboveground
☐ The piping will be underground

31. ☐ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of: _____.

32. ☐ **Attachment H - AST Containment Structure Drawings**. A scaled drawing of the containment structure is attached that shows the following:

☐ Interior dimensions (length, width, depth and wall and floor thickness).
☐ Internal drainage to a point convenient for the collection of any spillage.
☐ Tanks clearly labeled
☐ Piping clearly labeled
☐ Dispenser clearly labeled

33. ☐ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

☐ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.

34. ☒ The Site Plan must have a minimum scale of 1" = 400'.

    Site Plan Scale: 1" = 40'.

35. 100-year floodplain boundaries:

    ☒ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

    ☐ No part of the project site is located within the 100-year floodplain.

    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): _____.

36. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, etc. are shown on the site plan.

    ☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot contour intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, etc. are shown on the site plan.

37. ☒ A drainage plan showing all paths of drainage from the site to surface streams.

38. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

39. ☒ Areas of soil disturbance and areas which will not be disturbed.

40. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

41. ☒ Locations where soil stabilization practices are expected to occur.

42. ☐ Surface waters (including wetlands).

    ☒ N/A

43. ☐ Locations where stormwater discharges to surface water.

    ☒ There will be no discharges to surface water.

44. ☐ Temporary aboveground storage tank facilities.

    ☒ Temporary aboveground storage tank facilities will not be located on this site.

45. ☐ Permanent aboveground storage tank facilities.

☒ Permanent aboveground storage tank facilities will not be located on this site.

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

Practices and measures that will be used during and after construction is completed.

47. ☐ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

☒ N/A

48. ☐ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

☐ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____.

☒ N/A

49. ☐ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

☒ N/A

50. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.

☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.

☒ The site will not be used for low density single-family residential development.

51. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

    - ☐ **Attachment I - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
    - ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
    - ☒ The site will not be used for multi-family residential developments, schools, or small business sites.

52. ☒ **Attachment J - BMPs for Upgradient Stormwater**.

    - ☐ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.
    - ☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.
    - ☒ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

53. ☒ **Attachment K - BMPs for On-site Stormwater**.

    - ☐ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.
    - ☒ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

54. ☐ **Attachment L - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams is attached.

    ☒ N/A

55. ☒ **Attachment M - Construction Plans**. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are

attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

☐ N/A

56. ☐ **Attachment N - Inspection, Maintenance, Repair and Retrofit Plan**. A site and BMP specific plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan fulfills all of the following:

    ☐ Prepared and certified by the engineer designing the permanent BMPs and measures
    ☐ Signed by the owner or responsible party
    ☐ Outlines specific procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofit.
    ☐ Contains a discussion of record keeping procedures

    ☒ N/A

57. ☐ **Attachment O - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☒ N/A

58. ☒ **Attachment P - Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that result in water quality degradation.

    ☐ N/A

Responsibility for Maintenance of Permanent BMPs and Measures after Construction is Complete.

59. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

60. ☐ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development,

or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

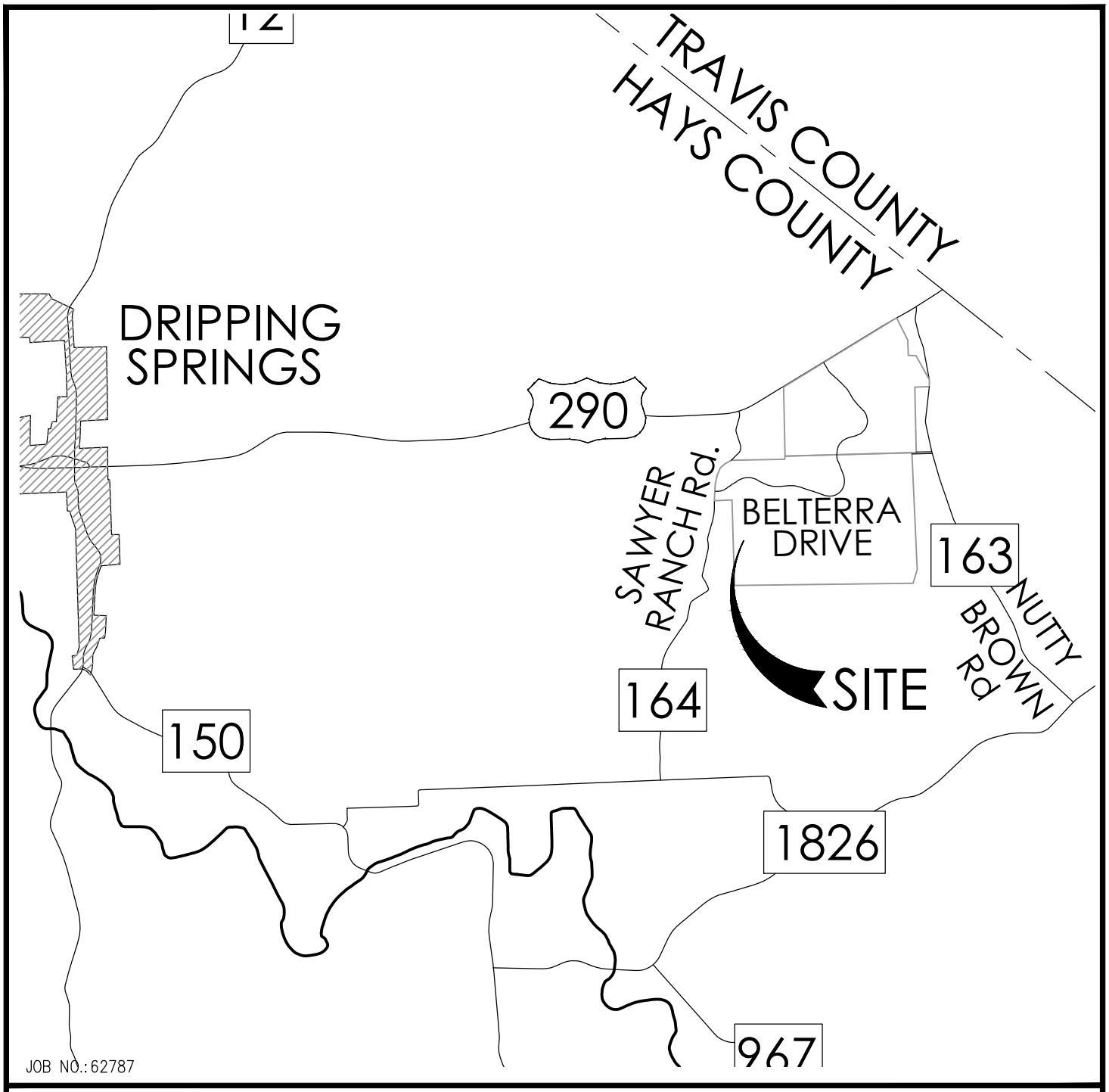
Administrative Information

61. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions.

62. ☒ Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.

63. ☒ The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.

☐ The Temporary Stormwater Section (TCEQ-0602) is included with the application.



ATTACHMENT A

ROAD MAP

HAYS COUNTY WCID NO. 2

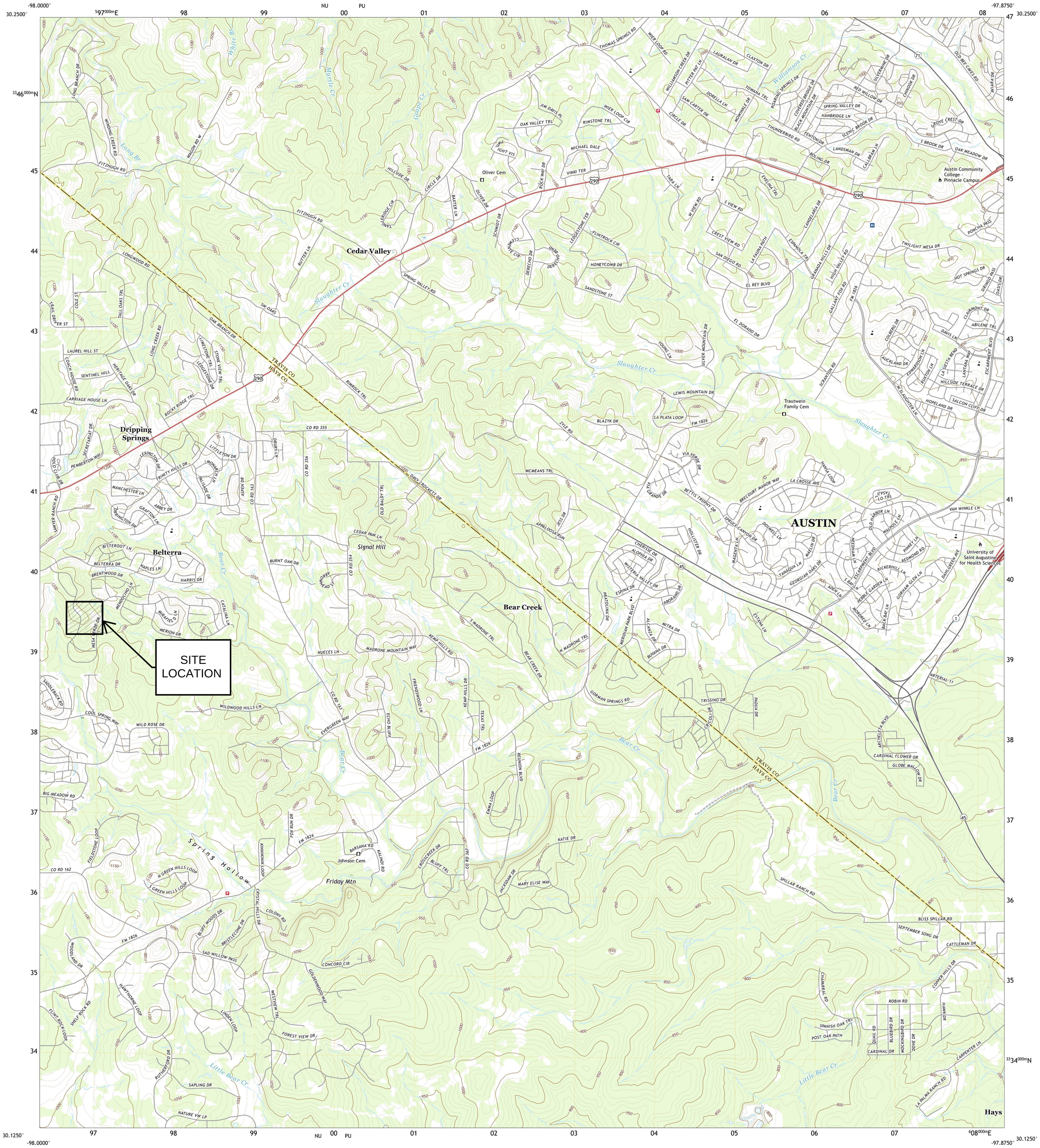
BURGESS & NIPLE, INC.
235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737 (512) 432-1000

DECEMBER 2025

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

SIGNAL HILL QUADRANGLE
TEXAS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery....NAIP, October 2016 - November 2016
Roads.... U.S. Census Bureau, 2015 - 2019
Names....GNIS, 1979 - 2022
Hydrography....National Hydrography Dataset, 2002 - 2018
Contours....National Elevation Dataset, 2019
Boundaries....Multiple sources; see metadata file 2019 - 2021

Wetlands....FWS National Wetlands Inventory Not Available

MN
GN
3°50'
68 MILS
0°32'
9 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
100
NU PU
Grid Zone Designation
14R

SCALE 1:24 000
KILOMETERS
METERS
MILES
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

1 Shingle Hills
2 Bee Cave
3 Austin West
4 Dripping Springs
5 Oak Hill
6 Driftwood
7 Mountain City
8 Buda
ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

SIGNAL HILL, TX
2022

NSN. 7643016398275
NGA REF NO. USGSX24K71605

Attachment C – Project Narrative

Hays County WCID No. 2 proposes to construct a District-owned park and trail facility, known as Pinnacle Park. The park will include both nature and concrete trails, along with a playscape area. It will be located on two lots spanning across two residential sections of the Belterra Subdivision: Belterra Section 21-2 and Belterra Section 20-2. The original CZP for these areas was submitted by the developer's engineer during the construction of the single-family development. This modification is being submitted by the District.

Based on the attached approval letters, the original CZP for Sections 20-1 and 20-2 provides a total suspended solids (TSS) removal capacity of 13,345 lbs, while only 9,900 lbs are required—resulting in an excess of 3,445 lbs. Section 21-2 requires removal of 10,631 lbs of TSS; however, the existing BMPs for that section remove 12,176 lbs, creating an excess of 1,545 lbs.

The Pinnacle Park project introduces an additional 422 lbs of pollutant load due to 0.47 acres of new impervious cover. Of this total, 45 lbs occur within Section 20-2 and 377 lbs within Section 21-1. Applying these loads reduces the existing TSS excesses as follows: Section 20-1/20-2 decreases from 3,445 lbs to 3,400 lbs, and Section 21-2 decreases from 1,545 lbs to 1,168 lbs.

Because the previously constructed water quality BMPs in Sections 20-1, 20-2, and 21-2 continue to provide treatment capacity beyond what is required, the additional impervious cover associated with the Pinnacle Park project can remain untreated. Therefore, no new water quality BMPs are proposed for this project.

See below for screen shots of the TCEQ's TSS removal Calculations Spreadsheet for each section:

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Pinnacle Park - Section 20-2
Date Prepared: 1/27/2026

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	9.64	acres
Predevelopment impervious area within the limits of the plan * =	0.55	acres
Total post-development impervious area within the limits of the plan* =	0.60	acres
Total post-development impervious cover fraction * =	0.06	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	45	lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Pinnacle Park - Section 21-2**
Date Prepared: **1/27/2026**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

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where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	79.95	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	0.42	acres
Total post-development impervious cover fraction * =	**0.01**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**377**	lbs.

ATTACHMENT D – FACTORS AFFECTING SURFACE WATER QUALITY

Surface water quality can be affected in two ways, during construction, and after construction. Each is considered separately.

During construction: Normal factors for construction affection surface water quality include:

> Erosion of disturbed Areas: Soil from areas where vegetation has been removed during construction has the potential to be transported by stormwater. Temporary BMPs, such as silt fence, temporary construction entrance/exit will be used to prevent soil and sediment from migrating off-site. These temporary controls will be maintained until vegetation is re-established in all disturbed areas.

After construction: Factors affecting surface water quality after construction is completed include:

> Pollutants from added impervious cover, mainly sediment particles from the trails and other paved surfaces. The runoff will remain the same in the post-development scenario as it was in the . There is no discharge from industrial activity associated with this project.

After completion of the construction, temporary erosion controls will remain in place until re-vegetation is established as indicated in the Storm Water Pollution Protection Plan.

ATTACHMENT E – VOLUME AND CHARACTER OF STORM WATER

The Rational Method was used to evaluate changes in stormwater runoff volume under pre-developed and post-developed conditions. The total impervious cover for the site will be 0.47 acres. Detention is not required because the increase in impervious cover results in only a negligible change in flow rate. In addition, existing upstream and downstream detention ponds already provide more than adequate detention capacity to offset any flow rate increases associated with this project.

ATTACHMENT J – BMPS FOR UPGRADIENT STORMWATER

Upgradient stormwater BMPs are not required for this project because no new permanent BMPs are proposed. The existing permanent BMPs are adequately oversized to accommodate and treat any additional pollutant load generated by the project.

ATTACHMENT K – BMPs FOR ON-SITE STORMWATER

BMPs will not be required for this site as explained in more detail in Attachment C, the project narrative.

ATTACHMENT M – CONSTRUCTION PLANS FOR BMPs

Construction plans have been prepared as outlined in the Contributing Zone Plan Application and under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by a Texas Licensed Professional Engineer. All design procedures were performed according to the TCEQ Edwards Aquifer technical Guidance Manual, RG-348. Design requirements, TCEQ Construction Notes, proposed measures and appropriate details are found in the attached plan set and are part of the Storm Water Pollution Protection Plan.

PLOTTED: 2/27/2026 8:45:27 AM

HAYS COUNTY WCID NO. 2
PINNACLE PARK
IMPROVEMENTS
CZP

Sheet List Table		
Seq. Number	Sheet Number	Sheet Title
1	G-001	TITLE SHEET
2	G-002	GENERAL NOTES
3	G-003	STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
4	C-101	EROSION CONTROL AND SEDIMENTATION PLAN
5	C-102	EXISTING DRAINAGE
6	C-103	PROPOSED DRAINAGE
7	C-104	OVERALL SITE PLAN
8	CG-501	GENERAL DETAILS

VICINITY MAP

SCALE: 1" = 2000'

N

STATE OF TEXAS
LAUREN BARZILLA
108483
REGISTERED PROFESSIONAL ENGINEER

02/05/2026

LAUREN B. BARZILLA, P.E. DATE

PROJECT ENGINEER

LAUREN B. BARZILLA, P.E.
PHONE (512) 432-1000

BURGESS & NIPLE INC.

235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737
PHONE: (512) 432-1000
PELS FIRM REGISTRATION NO. 10834

OWNER

HAYS COUNTY WCID NO. 2
600 W. 5TH STREET
SUITE 900
AUSTIN, TX 78701

P:\PR62787\CAD\Sheets\TITLE SHEET.dwg 2/26/2026 3:30:08 PM Darren McFatter

PLOTTED: 2/5/2026 2:54:39 PM

GENERAL ENGINEERING NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF DRIPPING SPRINGS, HAYS COUNTY WCID NO. 2 & HAYS COUNTY. CITY OF AUSTIN STANDARD SPECIFICATIONS SHALL GOVERN CONSTRUCTION WHERE NO OTHER REQUIREMENTS EXIST.
2. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY OF DRIPPING SPRINGS THE CONSULTING ENGINEER, OWNER, COUNTY INSPECTOR, AND ANY OTHER AFFECTED PARTIES, INCLUDING BUT NOT LIMITED TO, THE TCEQ. NOTIFY ALL SUCH PARTIES AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. THE CONTRACTOR SHALL GIVE THE CITY, COUNTY AND THE ENGINEER 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.
4. ANY EXISTING PAVEMENT, CURBS AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE BEFORE ACCEPTANCE OF THE SUBDIVISION.
5. THE LOCATION OF ANY WATER AND/OR WASTEWATER LINES OR OTHER UTILITIES TO BE CROSSED OR CONNECTED SHALL BE VERIFIED BY THE CONTRACTOR AT THE TIME OF COMMENCEMENT OF CONSTRUCTION.
6. MANHOLE FRAMES, COVERS, AND WATER VALVES SHALL BE SET TO FINISHED PAVEMENT GRADE BY THE UTILITY CONTRACTOR. ALL UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO FINAL PAVING CONSTRUCTION. COMPENSATION FOR UTILITY ADJUSTMENTS SHALL BE PAID FOR IN THE UNIT BID PRICE FOR EACH APPURTENANCE. NO ADDITIONAL PAYMENT WILL BE MADE FOR UTILITY ADJUSTMENTS.
7. CONTRACTOR SHALL VERIFY EXACT DEPTH AND LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, DRIVEWAYS, PAVEMENT, CURB & GUTTER, SIDEWALKS, ETC. SHALL BE REPAIRED BY THE CONTRACTOR, OR THE UTILITY, AT UTILITY'S OPTION, AND SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. ALL WATER MAINS SHALL HAVE A MINIMUM 36 INCHES OF COVER FROM FINISHED/NATURAL GRADE OR 36 INCHES BELOW ACTUAL SUBGRADE UNLESS OTHERWISE DENOTED ON THE PLANS.
9. CONTACT SHALL BE MADE TO BURGESS & NIPLE, INC. & THE DISTRICT 48 HOURS PRIOR TO CONNECTION TO EXISTING WATER AND/OR WASTEWATER LINES.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES, INCLUDING BUT NOT LIMITED TO, GAS LINES, WATERLINES, VALVE BOXES, FIRE HYDRANTS, STRUCTURES, AND OTHER APPURTENANCES THAT LIE WITHIN THE RIGHT-OF-WAY OR EASEMENTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ALL UTILITIES, DRIVEWAYS, PAVEMENT, CURB & GUTTER, SIDEWALKS, FENCES, AND ANY OTHER ITEMS DAMAGED DURING CONSTRUCTION REGARDLESS OF WHETHER ALL ITEMS ARE SHOWN ON THE PLANS AT HIS SOLE EXPENSE. THE LOCATIONS SHOWN OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES ARE APPROXIMATE. IN ADDITION TO NORMAL PRECAUTIONS WHEN EXCAVATING, TAKE EXTRA CAUTION WHEN EXCAVATING WITHIN 25 FT. OF ANY UTILITIES SHOWN ON THE PLANS.
11. WHENEVER EXISTING UTILITIES, NOT INDICATED ON THE PLANS, PRESENT OBSTRUCTIONS TO GRADE AND ALIGNMENT OF PIPE, IMMEDIATELY NOTIFY BURGESS & NIPLE, INC., WHO WILL DETERMINE WHENEVER EXISTING IMPROVEMENTS ARE TO BE RELOCATED, OR GRADE AND ALIGNMENT OF PIPE CHANGED. WHERE NECESSARY TO MOVE SERVICES, POLES, GUY WIRES, PIPELINES, ETC., AS DETERMINED BY THE ENGINEERS, THE CONTRACTOR WILL MAKE ARRANGEMENTS WITH THE OWNER OF THE UTILITY TO BE MOVED AND HAVE IT MOVED. THE COST OF ANY UTILITY RELOCATION WILL BE AT THE CONTRACTOR'S SOLE EXPENSE. OWNER WILL NOT BE LIABLE FOR RELOCATION COSTS OR DAMAGES ON ACCOUNT OF DELAYS DUE TO CHANGES MADE BY OWNERS OF OTHER PRIVATELY OR PUBLICLY OWNED UTILITIES WHICH HINDER PROGRESS OF THE WORK.
12. INCLUDE ADDITIONAL FLUSHING VALVES AND TEST CONNECTIONS NECESSARY TO PERFORM TEST AND STERILIZATION OPERATION. THERE WILL BE NO ADDITIONAL PAY FOR THESE VALVES AND CONNECTIONS USED FOR TESTING AND STERILIZATION PURPOSES, EXCEPT FOR THOSE SPECIFICALLY SHOWN ON THE PLANS. ALL FLUSHING ACTIVITY SHALL BE METERED.
13. ALL CONSTRUCTION ACTIVITIES, INCLUDING ACCESS, EGRESS, TRAVEL, STOCKPILING, ETC. ARE TO BE CONFINED TO AREAS IDENTIFIED BY THE OWNER.
14. ALL EXCESS SPOIL MATERIAL SHALL BE DISPOSED OF OFFSITE BY THE CONTRACTOR. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK EFFORT, INCLUDE COSTS IN RELATED BID ITEMS.
15. TREE DAMAGES AND CLEARING OUTSIDE THE RIGHT-OF-WAY OR EASEMENTS ARE EXPRESSLY PROHIBITED.
16. PIPE, FITTINGS AND JOINTS:
    GRAVITY SEWER - PVC OR FIBERGLASS PER CITY OF AUSTIN STANDARD PRODUCT LIST.
17. ALL GATE VALVES SHALL HAVE RESILIENT VALVE SEATS.
18. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM OF 8 MIL POLYETHYLENE WRAP.
19. AT ALL LOCATIONS WHERE A WATERLINE CROSSES A WASTEWATER LINE, THE CONSTRUCTION SHALL STRICTLY COMPLY WITH ALL APPLICABLE RULES AND REGULATIONS OF THE TCEQ.
20. THE CONTRACTOR SHALL FURNISH THE ENGINEER ONE SET OF "AS-BUILT" PLANS REFLECTING ALL CHANGES MADE IN THE FIELD.
21. THE ENGINEER SHALL BE GIVEN 48 HOURS NOTICE PRIOR TO ANY TESTING PHASE (DENSITY, PRESSURE, LEAKAGE, ETC.).
22. THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL NECESSARY TO PERFORM THE CONSTRUCTION IN A SAFE MANNER TO PROTECT THE PUBLIC SAFETY. NO SEPARATE PAY.
23. THE COST OF ALL FITTINGS SHALL BE INCLUDED IN THE PER FOOT UNIT COST OF PIPE.
24. THE CONTRACTOR SHALL PROVIDE PLUGS AT ALL PIPE STUB-OUTS. NO SEPARATE PAY.
25. THE CONTRACTOR SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR IS RESPONSIBLE FOR ASSURING THAT ALL PERMITS NECESSARY TO LEGALLY PERFORM THE WORK HAVE BEEN OBTAINED PRIOR TO COMMENCING CONSTRUCTION. REQUIRED PERMITS THAT CAN BE ISSUED TO THE CONTRACTOR ONLY WILL BE OBTAINED AT THE CONTRACTOR'S EXPENSE.
26. IF BLASTING IS PLANNED BY THE CONTRACTOR, A BLASTING PERMIT MUST BE SECURED PRIOR TO COMMENCEMENT OF ANY BLASTING.
27. THE CITY OF AUSTIN SPECIFICATION ITEM 509 WILL BE REQUIRED AS A MINIMUM TRENCH SAFETY MEASURE. CONTRACT DOCUMENTS REQUIRE A TRENCH SAFETY PLAN AND INCLUDE A PAY ITEM FOR TRENCH SAFETY MEASURES, IN COMPLIANCE WITH TEXAS HOUSE BILL 1569.
28. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH HAYS COUNTY REQUIREMENTS AND TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
29. PRIOR TO FINAL ACCEPTANCE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD SPECIFICATIONS, ITEM #604.ES,
30. LOT PINS REMOVED, COVERED, OR MOVED DURING CONSTRUCTION SHALL BE RELOCATED AT THE CONTRACTOR'S SOLE EXPENSE BY A REGISTERED PROFESSIONAL LAND SURVEYOR.
31. THE CITY OF AUSTIN OR ANY OTHER AGENCY LOGO SHALL NOT APPEAR ON ANY MANHOLE LIDS, VALVE BOX COVERS OR ANY OTHER RELATED APPURTENANCE. ALL ITEMS MENTIONED SHALL BE APPROVED AS A SUBMITTAL.
32. NO SAND BEDDING OR BACKFILL WILL BE ALLOWED FOR WASTEWATER AND STORM SEWER LINES. HAYS COUNTY AND ENGINEER SHALL APPROVE ALL BEDDING MATERIAL.
33. BENCH MARKS:

    BENCHMARK FOR THIS PROJECT IS A MAG NAIL WITH "BGE" WASHER SET IN THE SOUTHWEST CORNER OF A CONCRETE TRANSFORMER PAD ALONG THE WESTERLY RIGHT-OF-WAY OF MESA VERDE DRIVE, +/-365' NORTHEAST OF THE MOST EASTERLY CORNER OF LOT 1, BLOCK A, BELTERRA SECTION 21-2, AS RECORDED IN DOC. NO. 18015971 OF THE OFFICIAL RECORDS OF HAYS COUNTY, TEXAS, AS SHOWN HEREON.

    ELEVATION: 1,188.75 FEET (NAVD 88 DATUM)

HAYS COUNTY CONSTRUCTION NOTES:

1. SEVENTY-TWO (72) HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION, THE OWNER SHALL ARRANGE A PRE-CONSTRUCTION CONFERENCE WITH ALL PERTINENT PARTIES.
2. ALL ROADWAY AND DRAINAGE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HAYS COUNTY SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS FROM HAYS COUNTY ROAD AND BRIDGE DEPARTMENT PRIOR TO BEGINNING ANY ON-SITE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING THE NECESSARY INSPECTIONS FROM THE HAYS COUNTY ROAD AND BRIDGE DEPARTMENT. ALL REPAIRS TO IMPROVEMENTS CAUSED BY CONTRACTOR'S FAILURE TO INSTALL IMPROVEMENTS IN ACCORDANCE WITH HAYS COUNTY SPECIFICATIONS AND THESE CONSTRUCTION PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. HAYS COUNTY ROAD AND BRIDGE DEPARTMENT'S ACCEPTANCE OF THE IMPROVEMENTS ARE CONTINGENT ON REPAIRS BEING MADE TO HAYS COUNTY'S SATISFACTION. DELAYS CAUSED BY REPAIRS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
3. CONTRACTOR SHALL ENSURE THE VEHICLES LEAVING THE CONSTRUCTION SITE ONTO PUBLICLY MAINTAINED ROADWAYS ARE CLEAR OF MUD AND DEBRIS.
4. NO EXPLOSIVES SHALL BE USED FOR THIS PROJECT WITHOUT TCEQ APPROVAL.
5. ALL HOLES, TRENCHES AND OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY BARRICADES, FENCING, LIGHTS AND/OR OTHER PROTECTIVE DEVICES AT ALL TIMES.
6. CONTRACTOR SHALL COMPLY WITH CONSTRUCTION SEQUENCING WHICH MAY BE SPECIFIED SOMEWHERE IN THE CONSTRUCTION PLANS.
7. PERMIT IS REQUIRED FOR CONSTRUCTION IN "RIGHT OF WAY" : ORDINANCE 7.10. NO DRIVEWAY, UTILITY CONSTRUCTION, MAILBOXES, LANDSCAPING OR ANY OTHER ENCROACHMENT INTO RIGHT-OF-WAY OR EASEMENT SHALL BE ALLOWED WITHOUT FIRST OBTAINING A PERMIT FROM THE HAYS COUNTY ROAD AND BRIDGE DEPARTMENT.
8. PRIOR TO THE INSTALLATION OF ANY ROAD BUILDING MATERIAL THE SUBGRADE SHALL BE INSPECTED BY HAYS COUNTY. PRIOR TO PAVING, BASE MATERIAL SHALL BE INSPECTED BY HAYS COUNTY. THE OWNER OR HIS AGENT SHALL NOTIFY THE HAYS COUNTY ROAD DIRECTOR TWENTY-FOUR (24) HOURS PRIOR TO THE TIME WHEN THE INSPECTION IS NEEDED : ORDINANCE 1.05;2.06.
9. ALL ROAD SUBGRADE AND EMBANKMENTS SHALL BE COMPLETED TO A MINIMUM DENSITY OF NINETY FIVE PERCENT (95%) ACCORDING TO AASHTO T-99, METHOD D.
10. EACH COURSE OF BASE MATERIAL SHALL BE COMPACTED TO A DENSITY OF 100 PERCENT (100%), ACCORDING TO TXDOT TEST METHOD TEX-113-E.

TREE PROTECTION NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF TREES 6" IN DIAMETER AND SMALLER ONLY WHEN NECESSARY FOR WATER, WASTEWATER AND DRAINAGE FACILITIES BEING BUILT OUTSIDE THE RIGHT-OF-WAY. NO TREES LARGER THAN 6" IN DIAMETER SHALL BE REMOVED WITHOUT THE EXPRESS PERMISSION OF THE OWNER. OWNER WILL FLAG TREES TO BE SAVED & FOR TREE PROTECTION FENCING PRIOR TO CONSTRUCTION.
2. ALL TREES WITHIN THE LIMITS OF CONSTRUCTION SHALL BE PROTECTED AND SAVED UNLESS INDICATED TO BE REMOVED.
3. SAVED OR PROTECTED TREES DAMAGED OR REMOVED BY CONSTRUCTION ACTIVITIES WILL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
4. REPLACEMENT TREES WILL BE 3" CALIPER MINIMUM.
5. REPLACEMENT TREES WILL BE REPLACED AT A RATE OF ONE (1) CALIPER INCH OF TREE REPLACEMENT FOR EACH ONE (1) CALIPER INCH OF TREE REMOVED.(EX. -ONE (1) 9" CALIPER INCH TREE REMOVED EQUALS THREE (3) 3" CALIPER REPLACEMENT TREES PLANTED.)
6. REPLACEMENT TREE TYPES WILL BE SAME AS THAT REMOVED OR ONE OF THE FOLLOWING TYPES AS APPROVED BY OWNER'S REPRESENTATIVE: CEDAR ELM (ULMUS CRASSIFOLIA), YAUPON HOLLY (ILEX VOMITORIA), POSSUM-HAW HOLLY (ILEX DECIDUA), MOUNTAIN-LAUREL (SOPHORA SECUNDIFLORA), CHINQUAPIN OAK (QUERCUS MUHLENBERGII), LACEY OAK (QUERCUS LACEYI). LIVE OAK (QUERCUS VIRGINIANA), SHUMARD RED OAK (QUERCUS SHUMARDII), TEXAS RED OAK (QUERCUS TEXANA), OR PECAN (CARYA ILLINOINENSIS).
7. REPLACEMENT TREES SHALL BE PLANTED WITHIN 50 FEET OF WHERE THE EXISTING TREE WAS REMOVED IF POSSIBLE. WHERE SITE CONDITIONS CANNOT ACCOMMODATE REPLACEMENT TREES, CONTRACTOR SHALL CONSULT WITH OWNER'S REPRESENTATIVE FOR ALTERNATIVE PLANTING LOCATION(S).
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING TEMPORARY IRRIGATION FOR A MINIMUM ONE (1) YEAR PERIOD ON AREAS NOT COVERED BY IRRIGATION.
9. REPLACEMENT TREES WILL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM TIME OF PROJECT COMPLETION AND FINAL INSPECTION BY OWNER'S REPRESENTATIVE. TREES THAT HAVE DIED, OR PARTIALLY DIED, DURING THE WARRANTY PERIOD WILL BE REPLACED WITH THE SAME SIZE AND SPECIES. THE REPLACED TREE WILL BE WARRANTED FOR A ONE YEAR (1) PERIOD.
10. HAND EXCAVATE ALL WORK UNDER EXISTING TREE DRIPLINES. USE ROCK SAW TO KEEP CUTS CLEAN. KEEP EXPOSED ROOTS MOIST BY COVERING WITH BURLAP AND WATERING IF TO BE LEFT OVER NIGHT OR ALTERNATIVE APPROVED METHOD.

CONSTRUCTION SEQUENCING:

1. INSTALL TEMPORARY EROSION CONTROLS PRIOR TO ANY SITE CLEARING AND GRUBBING.
2. CONSTRUCT GRADING TRAILS AND PLAYSCAPE.
3. COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION.
4. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.
5. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED.

TCEQ CONTRIBUTING ZONE PLAN GENERAL CONSTRUCTION NOTES

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY GROUND DISTURBANCE OR CONSTRUCTION ACTIVITIES. THIS NOTICE MUST INCLUDE:
    - THE NAME OF THE APPROVED PROJECT;
    - THE ACTIVITY START DATE; AND
    - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN (CZP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.
3. NO HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.
4. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
5. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
6. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.
8. ALL EXCAVATED MATERIAL THAT WILL BE STORED ON-SITE MUST HAVE PROPER E&S CONTROLS.
9. IF PORTIONS OF THE SITE WILL HAVE A CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14th DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21st DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14th DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
10. THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
    - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
    - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
    - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
11. THE HOLDER OF ANY APPROVED CZP MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
    A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES (BMPS) OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;
    B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;
    C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER; OR
    D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE APPROVED CONTRIBUTING ZONE PLAN.

STATE OF TEXAS
LAUREN BARZILLA
108483
REGISTERED PROFESSIONAL ENGINEER
2/5/2026

BURGESS & NIPLE INC.
235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737
PHONE: (512) 432-1000
PELS FIRM REGISTRATION NO. 10834

HAYS COUNTY WCID NO. 2
PINNACLE PARK IMPROVEMENTS
CZP

REVISIONS		
NO.	DESCRIPTION	DATE

JOB NO:	PR62787
DATE:	JAN 2026
DESIGNED BY:	B&N
DRAWN BY:	B&N
CHECKED BY:	LBB
APPROVED BY:	LBB
SCALE:	AS NOTED

GENERAL NOTES

SHEET IDENTIFICATION
G-002

SHEET: 2 OF 8

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PLOTTED: 2/5/2026 2:54:45 PM

GENERAL NOTES:

THE CONTRACTOR SHALL COMPLY WITH ALL OF THE REQUIREMENTS SET FORTH IN THE TEXAS COMMISSION OF ENVIRONMENTAL QUALITY (TCEQ) "TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM" (TPDES). INFORMATION ON THE TPDES CONSTRUCTION GENERAL PERMITS MAY BE OBTAINED BY CONTACTING THE TCEQ AT 512-339-2929. INFORMATION IS ALSO AVAILABLE THROUGH TCEQ WEB SITE AT "www.tnrcc.state.tx.us/waterperm/wwperm/construct.html". DISCLAIMER: INFORMATION CONTAINED IN THIS PARAGRAPH IS BASED UPON THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL NECESSARY FORMS AND DOCUMENTATION AND COMPLY WITH THE PROVISIONS OF THE TPDES.

THE CONTRACTOR WILL BE REQUIRED TO FOLLOW BEST MANAGEMENT PRACTICES AND TO USE AND MAINTAIN SEDIMENTATION AND WATER POLLUTION CONTROL DEVICES AS REQUIRED.

THE CONTRACTOR SHALL PROVIDE THE OWNER 48 HOURS NOTICE PRIOR TO DISTURBING ANY VEGETATION OR BEGINNING ANY SITE PREPARATION IN ADVANCE OF THE EARTHWORK OPERATION. THE 48 HOUR NOTICE PROVIDES THE OWNER THE REQUIRED TIME TO FILE AND POST THE "NOTICE OF INTENT" (NOI) WITH THE TCEQ.

THE CONTRACTOR SHALL NOT RECEIVE FINAL PAYMENT FOR THE PROJECT UNTIL THE UNPAVED AREAS HAVE ACHIEVED 70% VEGETATIVE COVER WITH PERMANENT GRASSES, AND THE OWNER HAS FILED THE "NOTICE OF TERMINATION" (NOT) WITH THE TCEQ.

IN AREAS THAT HAVE ACHIEVED 70% VEGETATIVE COVER (WHEN COMPARED TO THE SURROUNDING, UNDISTURBED, VEGETATIVE COVER), THE CONTRACTOR MAY REMOVE AND REUSE ANY TEMPORARY EROSION CONTROL DEVICES (THAT ARE IN REASONABLE CONDITION) ON OTHER LOCATIONS IN THE DEVELOPMENT. ADDITIONAL SEEDING MAY BE REQUIRED TO VEGETATE THE AREAS WHERE THE STRUCTURAL CONTROLS WERE REMOVED.

PRIOR TO ACCEPTANCE AND FINAL PAYMENT, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES.

ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE PLACED PRIOR TO CONSTRUCTION IN ANY AREA, OR AS SOON AS PRACTICAL.

THE CONTRACTOR SHALL PROVIDE FOR ALL INTERIM DRAINAGE ON THE PROJECT. THE INTERIM DRAINAGE SHALL ENSURE THAT ALL RUNOFF IS CHANNELED TO THE TEMPORARY CONTROL DEVICES.

THE CONTRACTOR SHALL TAKE THE STEPS NECESSARY TO ENSURE THAT ALL CONSTRUCTION TRAFFIC LEAVING THE PROJECT SHALL NOT TRACK MUD OR OTHER DEBRIS ONTO ANY ROADWAY, PUBLIC STREET OR ANY ROADWAY WITHIN THE DEVELOPMENT. SHOULD MUD OR OTHER DEBRIS BE TRACKED ONTO ANY ROADWAY, THE CONTRACTOR SHALL TAKE IMMEDIATE STEPS TO REMOVE IT TO THE SATISFACTION OF THE OWNER AND/OR ANY REGULATORY AUTHORITY.

TEMPORARY CONSTRUCTION ENTRANCES SHALL BE UTILIZED WHERE NECESSARY.

SPRINKLING OF ROADWAYS SHALL BE REQUIRED TO CONTROL DUST.

THE CONTRACTOR SHALL MODIFY, AS NECESSARY, ANY TEMPORARY EROSION CONTROL DEVICES SO THAT THEY SERVE THEIR INTENDED PURPOSE.

THE CONTRACTOR SHALL MAINTAIN ALL TEMPORARY EROSION DEVICES TO A CONDITION SIMILAR TO THAT OF WHEN IT WAS ORIGINALLY INSTALLED.

THE CONTRACTOR SHALL KEEP ALL TEMPORARY EROSION CONTROL DEVICES FREE OF SILT AND/OR ANY OTHER MATERIAL THAT MAY ACCUMULATE. REMOVAL SHALL OCCUR AS SOON AS PRACTICAL AFTER A RAINFALL. IN NO INSTANCE SHALL SILT BE PERMITTED TO ACCUMULATE TO A DEPTH ABOVE, OR IN EXCESS OF 50% OF THE DESIGN CAPACITY OF THE DEVICE.

AS REQUIRED BY THE OWNER, THE CONTRACTOR SHALL ACCOMPANY THE OWNER DURING THE INSPECTION OF THE EROSION CONTROL DEVICES TO DISCUSS MODIFICATIONS TO ENSURE THE DEVICES SERVE THEIR INTENDED PURPOSE.

THE CONTRACTOR SHALL PROTECT ALL AREAS (TREES AND MATURE VEGETATION). WHETHER WITHIN OR OUTSIDE OF THE ACTUAL LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION AS GOOD AS, OR BETTER THAN, THAT PRESENT PRIOR TO THE CONSTRUCTION.

ALL CONSTRUCTION AND CONSTRUCTION EQUIPMENT SHALL REMAIN WITHIN THE LIMITS OF CONSTRUCTION UNLESS THE OWNER HAS GRANTED PRIOR AUTHORIZATION.

IN THE EVENT THE CONTRACTOR ESTABLISHES A YARD ON THE PROJECT. HE SHALL BE RESPONSIBLE FOR ESTABLISHING HIS OWN STORM WATER POLLUTION PREVENTION PLAN AND COMPLYING WITH THE REQUIREMENTS THEREOF.

THE CONTRACTOR SHALL KEEP THE DEVELOPMENT FREE FROM LITTER.

NOTE:

DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITY HAS CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN FOURTEEN (14) DAYS UNLESS ACTIVITIES ARE SCHEDULED TO RESUME AND DO SO WITHIN TWENTY -ONE (21) DAYS. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.

TEMPORARY AND PERMANENT EROSION CONTROL AND SEDIMENTATION CONTROL NOTES PERMANENT EROSION AND SEDIMENTATION CONTROL

1. ALL DISTURBED AREAS SHALL BE RESTORED AS SPECIFIED AND IN ACCORDANCE WITH CITY OF AUSTIN STANDARD SPECIFICATIONS - SERIES 600, ENVIRONMENTAL ENHANCEMENT. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DISTURBED AREAS (EXCEPT ROCK).

   THE CONTRACTOR SHALL HYDROMULCH OR SOD ALL EXPOSED CUTS AND FILLS UPON COMPLETION OF CONSTRUCTION, EXCEPT WHERE CUTS ARE MADE IN SOLID ROCK. THE SEEDING OR EROSION CONTROL SHALL BE APPLIED AT THE SPECIFIC RATE OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS UNLESS AN ALTERNATIVE SEED MIX IS APPROVED BY THE OWNER:

   FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH A COMBINATION OF 1 POUND PER 1000 SQUARE FEET OF UNHULLED BERMUDA AND 1 POUND PER 1000 SQUARE FEET OF WINTER RYE WITH A PURITY OF 95% GERMINATION.

   FROM MARCH 1 TO SEPTEMBER 15, SEEDING SHALL BE WITH HULLED BERMUDA GRASS (CYNODEN DACTOLYN) AT A RATE OF 1 POUND PER 1000 SQUARE FEET WITH A PURITY OF 95% WITH 85% GERMINATION.

   FERTILIZER SHALL HAVE AN ANALYSIS OF 15-15-15 AND SHALL BE APPLIED AT A RATE OF 1 LB. PER 1000 SQUARE FEET. MULCH TYPE TO BE STRAW OR HAY APPLIED AT A RATE OF 500 POUNDS PER ACRE. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS REACHED A HEIGHT OF AT LEAST 1-1/2" (95%) COVERAGE AND NO BARE SPOTS LARGER THEN 16 SQUARE FEET EXIST.

2. THE SEEDED OR PLANTED AREA IS TO BE IRRIGATED OR SPRINKLED IN A MANNER WHICH WILL NOT ERODE THE TOPSOIL BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN DAY INTERVALS FOR THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF AT LEAST 1/2 INCH SHALL POSTPONE THE WATERING OPERATIONS FOR ONE WEEK.

3. WHEN REQUIRED, NATIVE GRASS SEEDING SHALL COMPLY WITH SECTION 604.6 (NATIVE GRASS SEEDING) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS - SERIES 600, ENVIRONMENTAL ENHANCEMENT.

SITE DESCRIPTION

A. THE PROJECT SHALL CONSIST OF THE CONSTRUCTION OF UTILITY IMPROVEMENTS.

B. SEQUENCE OF MAJOR ACTIVITIES:
-INSTALLATION OF EROSION/ SEDIMENTATION CONTROLS.
-ROUGH SITE GRADING.
-INSTALLATION OF TRAILS AND PLAYSCAPE.
-REVEGETATION OF DISTURBED AREAS.
-REMOVAL AND PROPER DISPOSAL OF EROSION/SEDIMENTATION CONTROLS ONCE PERMANENT VEGETATION IS ESTABLISHED.

C. ESTIMATE OF SITE AREA:
TOTAL SIZE: 87.59 ACRES
TOTAL DISTURBED AREA: 3.35 ACRES

D. ESTIMATED SITE RUNOFF COEFFICIENTS FOR THE 100 YEAR STORM:
SEE DRAINAGE SHEETS

THE SOIL IS MOSTLY BRACKETT-ROCK OUTCROP-COMFORT COMPLEX 1 TO 8 PERCENT SLOPES AND BRACKETT-ROCK OUTCROP-REAL COMPLEX, 8 TO 30 PERCENT SLOPS.

E. LOCATION MAP (COVER SHEET)

F. THERE IS NO INDUSTRIAL ACTIVITY OTHER THAN CONSTRUCTION ACTIVITIES

G. RECEIVING WATERS:
RUNOFF FROM THE SITE DISCHARGES TO A TRIBUTARY OF BEAR CREEK, WHICH DISCHARGES INTO BEAR CREEK, WHICH DISCHARGES INTO ONION CREEK, WHICH DISCHARGES TO THE COLORADO RIVER, FLOWING TO THE GULF OF MEXICO.

NOTES:

-MEASURES WILL BE REVISED AS NECESSARY TO PREVENT SEDIMENT FROM LEAVING THE PROJECT SITE
-ANY SEDIMENT THAT ESCAPES THE SITE WILL BE REMOVED IMMEDIATELY AND CORRECTIVE ACTION TAKEN TO PREVENT ITS RECURRENCE
-LITTER AND OTHER DEBRIS WILL BE COLLECTED FROM THE SITE ROUTINELY
-ALL ON-SITE AND OFF-SITE MATERIAL STORAGE AREAS SHALL BE PROTECTED

REQUIREMENTS

THE FOLLOWING RECORDS SHALL BE KEPT BY THE CONTRACTOR, WITH THE SWPPP:
-DATES WHEN MAJOR GRADING ACTIVITIES OCCUR
-DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY CEASE
-DATES WHEN CONSTRUCTION ACTIVITIES PERMANENTLY CEASE
-DATES WHEN STABILIZATION MEASURES ARE INITIATED

THE SWPPP SHALL BE AMENDED WHEN:
-THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF THE SYSTEM OR SITE
-INSPECTIONS INDICATE THE PLAN IS NOT MEETING THE DESIRED OBJECTIVES

THE OWNER/OPERATOR SHALL POST A NOTICE NEAR THE MAIN ENTRANCE OF THE CONSTRUCTION SITE WITH THE FOLLOWING INFORMATION:
-TPDES PERMIT NUMBER OR A COPY OF THE NOI IF THE PERMIT NUMBER HAS NOT YET BEEN ASSIGNED
-THE NAME AND TELEPHONE NUMBER OF A LOCAL CONTACT PERSON
-A BRIEF DESCRIPTION OF THE PROJECT
-THE LOCATION OF THE SWPPP

STRUCTURAL PRACTICES

___X___ SILT FENCES
_____ HAY BALES
_____ ROCK BERMS
_____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
_____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
_____ DIVERSION DIKE AND SWALE COMBINATION
_____ BRUSH BERMS
_____ CONCRETE FLUMES
___X___ STABILIZED (ROCK) CONSTRUCTION ENTRANCES
_____ SEDIMENT TRAPS
_____ SEDIMENT BASINS
_____ STONE OUTLET STRUCTURES CURB AND GUTTERS
_____ STORM SEWERS
_____ VELOCITY CONTROL DEVICES

STABILIZATION PRACTICES

___X___ TEMPORARY VEGETATION
___X___ PERMANENT VEGETATION
_____ CELLULOSE FIBER MULCHING
_____ VEGETATIVE BUFFER STRIPS
___X___ PROTECTION OF TREES
_____ PROTECTION OF MATURE VEGETATION
_____ GEOTEXTILES
_____ SOD STABILIZATION

INSPECTIONS

QUALIFIED PERSONNEL SHALL INSPECT DISTURBED AREAS THAT HAVE NOT BEEN FINALLY STABILIZED, STORAGE AREAS, STRUCTURAL CONTROLS, AND AREAS WHERE CONSTRUCTION AND OTHER VEHICLES LEAVE THE SITE AT LEAST ONCE EVERY FOURTEEN (14) DAYS AND WITHIN TWENTY-FOUR (24) HOURS OF THE END OF A STORM EVENT OF ½ INCHES OR GREATER.

DISTURBED AREAS SHALL BE INSPECTED FOR EVIDENCE OF, OR POTENTIAL FOR, SEDIMENT ENTERING THE DRAINAGE SYSTEM.

AFTER THE INSPECTIONS, THE SWPPP SHALL BE MODIFIED AS NECESSARY TO INCLUDE ADDITIONAL BMP'S (BEST MANAGEMENT PRACTICES) DESIGNED TO CORRECT DEFICIENCIES IDENTIFIED.

REVISIONS (MODIFICATIONS) SHALL BE COMPLETED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION, IF POSSIBLE IMPLEMENT BEFORE NEXT STORM EVENT.

IF EXISTING BMP'S NEED TO BE MODIFIED OR ADDITIONAL BMP'S ARE REQUIRED, IMPLEMENTATIONS SHALL BE COMPLETED PRIOR TO THE NEXT ANTICIPATED STORM EVENT OR AS SOON AS PRACTICAL.

A REPORT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE SWPPP SHALL BE MADE AND RETAINED AS PART OF THE SWPPP FOR AT LEAST THREE (3) YEARS FROM THE DATE THE "NOTICE OF TERMINATION" (NOT) IS SUBMITTED.

THE OBSERVATIONS SHOULD INCLUDE:
-SEDIMENT DISCHARGES FROM THE SITE
-LOCATION OF BMP'S THAT SHOULD BE MAINTAINED
-LOCATION OF BMP'S THAT WERE INADEQUATE
-LOCATION WHERE ADDITIONAL BMP'S SHALL BE INSTALLED

WHERE AN INSPECTION DOES NOT INDICATE THAT MODIFICATIONS TO EXISTING BMP'S ARE NECESSARY OR ADDITIONAL BMP'S ARE REQUIRED, A REPORT SHALL BE PREPARED WITH A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE SWPPP AND THE TPDES PERMIT.

STANDARD PERMIT CONDITIONS

1. THE PERMITTEE HAS A DUTY TO COMPLY WITH ALL PERMIT CONDITIONS. FAILURE TO COMPLY WITH ANY PERMIT CONDITION IS A VIOLATION OF THE PERMIT AND STATUTES UNDER WHICH IT WAS ISSUED, AND IS GROUNDS FOR ENFORCEMENT ACTION, FOR TERMINATING COVERAGE UNDER THIS GENERAL PERMIT, OR FOR REQUIRING A DISCHARGER TO APPLY FOR AND OBTAIN AN INDIVIDUAL TPDES PERMIT.

2. AUTHORIZATION UNDER THIS GENERAL PERMIT MAY BE SUSPENDED OR REVOKED FOR CAUSE. FILING A NOTICE OF PLANNED CHANGES OR ANTICIPATED NON-COMPLIANCE BY THE PERMITTEE DOES NOT STAY ANY PERMIT CONDITION. THE PERMITTEE MUST FURNISH TO THE EXECUTIVE DIRECTOR, UPON REQUEST AND WITHIN A REASONABLE TIME, ANY INFORMATION NECESSARY FOR THE EXECUTIVE DIRECTOR TO DETERMINE WHETHER CAUSE EXISTS FOR REVOKING, SUSPENDING, OR TERMINATING AUTHORIZATION UNDER THIS PERMIT. ADDITIONALLY, THE PERMITTEE MUST PROVIDE TO THE EXECUTIVE DIRECTOR, UPON REQUEST, COPIES OF ALL RECORDS THAT THE PERMITTEE IS REQUIRED TO MAINTAIN AS A CONDITION OF THIS GENERAL PERMIT.

3. IT IS NOT A DEFENSE FOR A DISCHARGER IN AN ENFORCEMENT ACTION THAT IT WOULD HAVE BEEN NECESSARY TO HALT OR REDUCE THE PERMITTED ACTIVITY TO MAINTAIN COMPLIANCE WITH THE PERMIT CONDITIONS.

4. INSPECTION AND ENTRY SHALL BE ALLOWED UNDER TEXAS WATER CODE CHAPTERS 26-28, HEALTH AND SAFETY CODE §§ 361.032-361.033 AND 361.037, AND 40 CODE OF FEDERAL REGULATIONS (CFR) § 122.41(i). THE STATEMENT IN TEXAS WATER CODE § 26.014 THAT COMMISSION ENTRY OF A FACILITY SHALL OCCUR ACCORDING TO AN ESTABLISHMENT'S RULES AND REGULATIONS CONCERNING SAFETY, INTERNAL SECURITY, AND FIRE PROTECTION IS NOT GROUNDS FOR DENIAL OR RESTRICTION OF ENTRY TO ANY PART OF THE FACILITY OR SITE, BUT MERELY DESCRIBES THE COMMISSION'S DUTY TO OBSERVE APPROPRIATE RULES AND REGULATIONS DURING AN INSPECTION.

5. THE DISCHARGER IS SUBJECT TO ADMINISTRATIVE, CIVIL, AND CRIMINAL PENALTIES, AS APPLICABLE, UNDER TEXAS WATER CODE §§ 26.136, 26.212, AND 26.213 FOR VIOLATIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

   a. NEGLIGENTLY OR KNOWINGLY VIOLATING CWA, §§ 301, 302, 306, 307, 308, 318, OR 405, OR ANY CONDITION OR LIMITATION IMPLEMENTING ANY SECTIONS IN A PERMIT ISSUED UNDER CWA § 402, OR ANY REQUIREMENT IMPOSED IN A PRETREATMENT PROGRAM APPROVED UNDER CWA, §§ 402(a)(3) OR 402(b)(8);

   b. KNOWINGLY MAKING ANY FALSE STATEMENT, REPRESENTATION, OR CERTIFICATION IN ANY RECORD OR OTHER DOCUMENT SUBMITTED OR REQUIRED TO BE MAINTAINED UNDER A PERMIT, INCLUDING MONITORING REPORTS OR REPORTS OF COMPLIANCE OR NONCOMPLIANCE.

6. ALL REPORTS AND OTHER INFORMATION REQUESTED BY THE EXECUTIVE DIRECTOR MUST BE SIGNED BY THE PERSON AND IN THE MANNER REQUIRED BY 30TAC § 305.128 (RELATING TO SIGNATORIES TO REPORTS).

7. AUTHORIZATION UNDER THIS GENERAL PERMIT DOES NOT CONVEY PROPERTY OR WATER RIGHTS OF ANY SORT AND DOES NOT GRANT ANY EXCLUSIVE PRIVILEGE.

SPILL RESPONSE PLAN

1. ALL SPILLS MEETING THE FOLLOWING CRITERIA MUST BE IMMEDIATELY REPORTED TO THE TEXAS SPILL HOTLINE (1-800-832-8224), WHICH IS OPERATED 24 HRS A DAY.

KIND OF SPILL	WHERE DISCHARGED	AMOUNT
PETROLEUM PRODUCTS	LAND WATER	25 GAL LEAVES A SHEEN ON WATER SURFACE
CHEMICALS	WATER	100 LBS

IF POSSIBLE, BE PREPARED TO ANSWER THE FOLLOWING QUESTIONS:
- DATE AND TIME OF SPILL.
- IDENTITY OF MATERIAL SPILLED.
- ESTIMATE OF THE QUANTITY OF MATERIAL SPILLED AND DURATION.
- THE EXACT LOCATION OF THE SPILL, INCLUDING THE NAME OF WATERS INVOLVED OR THREATENED (ONION CREEK/WALNUT SPRINGS)
- EXTENT OF ACTUAL AND POTENTIAL WATER POLLUTION.
- SOURCE OF THE SPILL.
- NAME, ADDRESS, AND PHONE NUMBER OF THE PARTY IN CHARGE OF, OR RESPONSIBLE FOR THE PROJECT OR ACTIVITY ASSOCIATED WITH THE SPILL.
- THE STEPS BEING TAKEN OR PROPOSED TO CONTAIN AND CLEAN UP THE SPILL AND ANY PRECAUTIONS TAKEN TO MINIMIZE IMPACTS, INCLUDING EVACUATION.
- THE EXTENT OF INJURIES, IF ANY.
- ANY KNOWN OR ANTICIPATED HEALTH RISKS.
- POSSIBLE HAZARDS TO THE ENVIRONMENT (AIR, SOIL, WATER, WILDLIFE, ETC.)
- THE IDENTITIES OF ANY RESPONDING AGENCIES.

2. IMMEDIATELY CONTAIN SPILLS OF ALL QUANTITIES AND MATERIALS. IF A LIQUID SPILL OCCURS ON PAVED SURFACES, ENCIRCLE THE SPILL WITH ABSORBENT MATERIALS. IF A LIQUID SPILL OCCURS IN DIRT AREAS, IMMEDIATELY CONTAIN THE SPILL BY CONSTRUCTING AN EARTHEN DIKE. PROMPTLY AND PROPERLY DISPOSE OF CONTAMINATED ABSORBENT MATERIAL AND DIRT. NEVER HOSE DOWN OR BURY DRY MATERIAL SPILLS.

3. WHEN VEHICLE MAINTENANCE AND/OR FUELING OCCURS ONSITE, USE A DESIGNATED AREA LOCATED AWAY FROM DRAINAGE COURSES. REGULARLY INSPECT ONSITE VEHICLES AND EQUIPMENT FOR LEAKS. REPAIR IMMEDIATELY.

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

SHEET IDENTIFICATION
G-003

SHEET: 3 OF 8

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EROSION CONTROL AND SEDIMENTATION PLAN

SHEET IDENTIFICATION
C-101

SHEET: 4 OF 8

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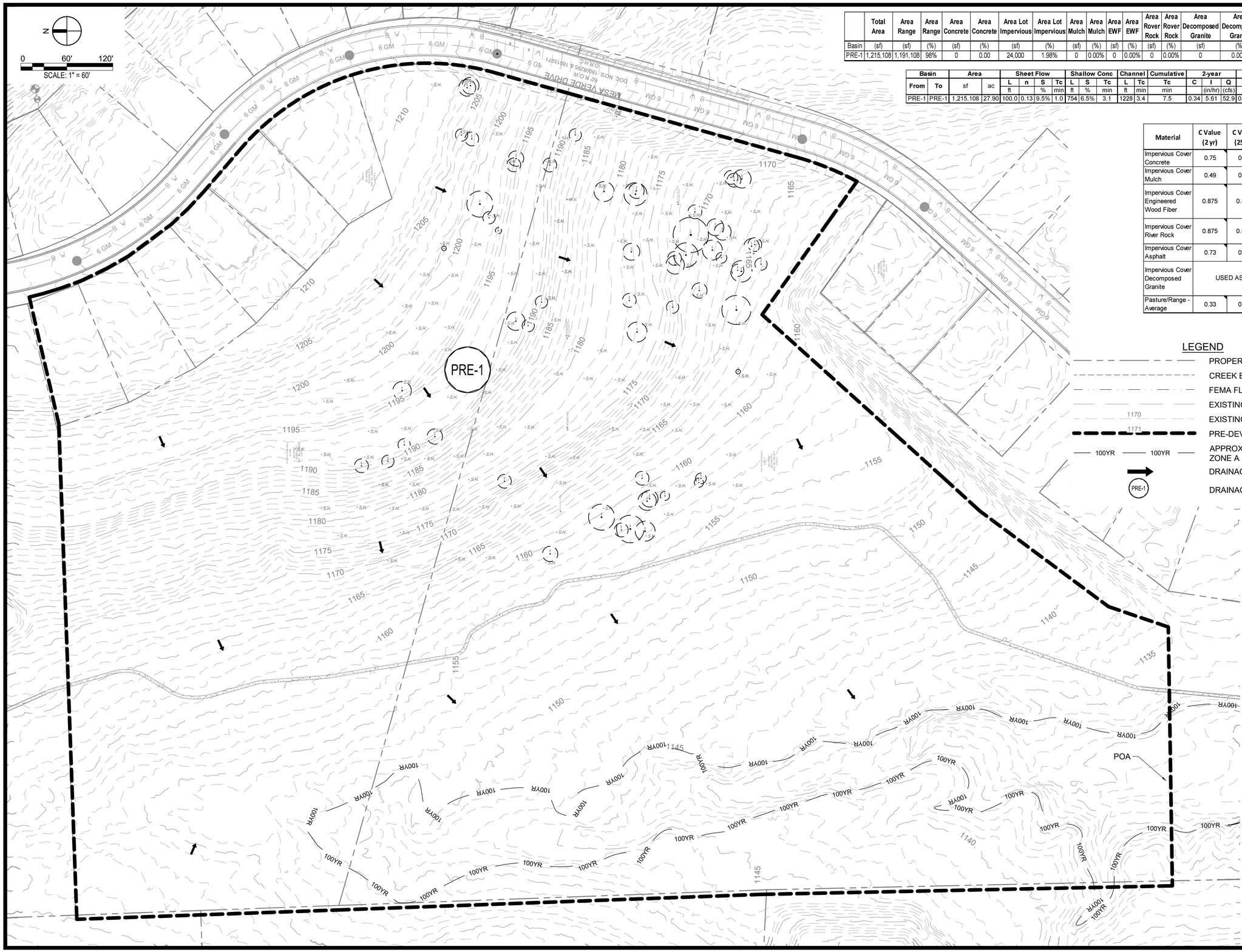

	Total Area	Area Range	Area Range	Area Concrete	Area Concrete	Area Lot Impervious	Area Lot Impervious	Area Mulch	Area Mulch	Area EWF	Area EWF	Area Rover Rock	Area Rover Rock	Area Decomposed Granite	Area Decomposed Granite	C-Value	C-Value	C-Value
Basin	(sf)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	2 Yr	25 Yr	100 Yr
PRE-1	1,215,108	1,191,108	98%	0	0.00	24,000	1.98%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0.34	0.43	0.50

Basin		Area		Sheet Flow				Shallow Conc			Channel		Cumulative	2-year			25-year			100-year		
From	To	sf	ac	L	n	S	Tc	L	S	Tc	L	Tc	Tc	C	I	Q	C	I	Q	C	I	Q
				ft		%	min	ft	%	min	ft	min	min		(in/hr)	(cfs)		in/hr	cfs		in/hr	cfs
PRE-1	PRE-1	1,215,108	27.90	100.0	0.13	9.5%	1.0	754	6.5%	3.1	1228	3.4	7.5	0.34	5.61	52.9	0.43	10.44	126.0	0.50	13.63	191.4

Material	C Value (2 yr)	C Value (25 yr)	C Value (100 yr)
Impervious Cover Concrete	0.75	0.88	0.97
Impervious Cover Mulch	0.49	0.49	0.49
Impervious Cover Engineered Wood Fiber	0.875	0.875	0.875
Impervious Cover River Rock	0.875	0.875	0.875
Impervious Cover Asphalt	0.73	0.86	0.95
Impervious Cover Decomposed Granite	USED ASPHALT C		
Pasture/Range - Average	0.33	0.42	0.49

LEGEND

- PROPERTY LINE
- CREEK BUFFER
- FEMA FLOOD PLAIN
- EXISTING MAJOR CONTOURS (1170)
- EXISTING MINOR CONTOURS (1171)
- PRE-DEVELOPED DRAINAGE AREA
- 100YR — APPROXIMATE LIMITS OF ZONE A FEMA FLOODPLAIN
- DRAINAGE ARROW
- (PRE-1) DRAINAGE AREA LABEL

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EXISTING DRAINAGE

SHEET IDENTIFICATION
C-102

SHEET: 5 OF 8

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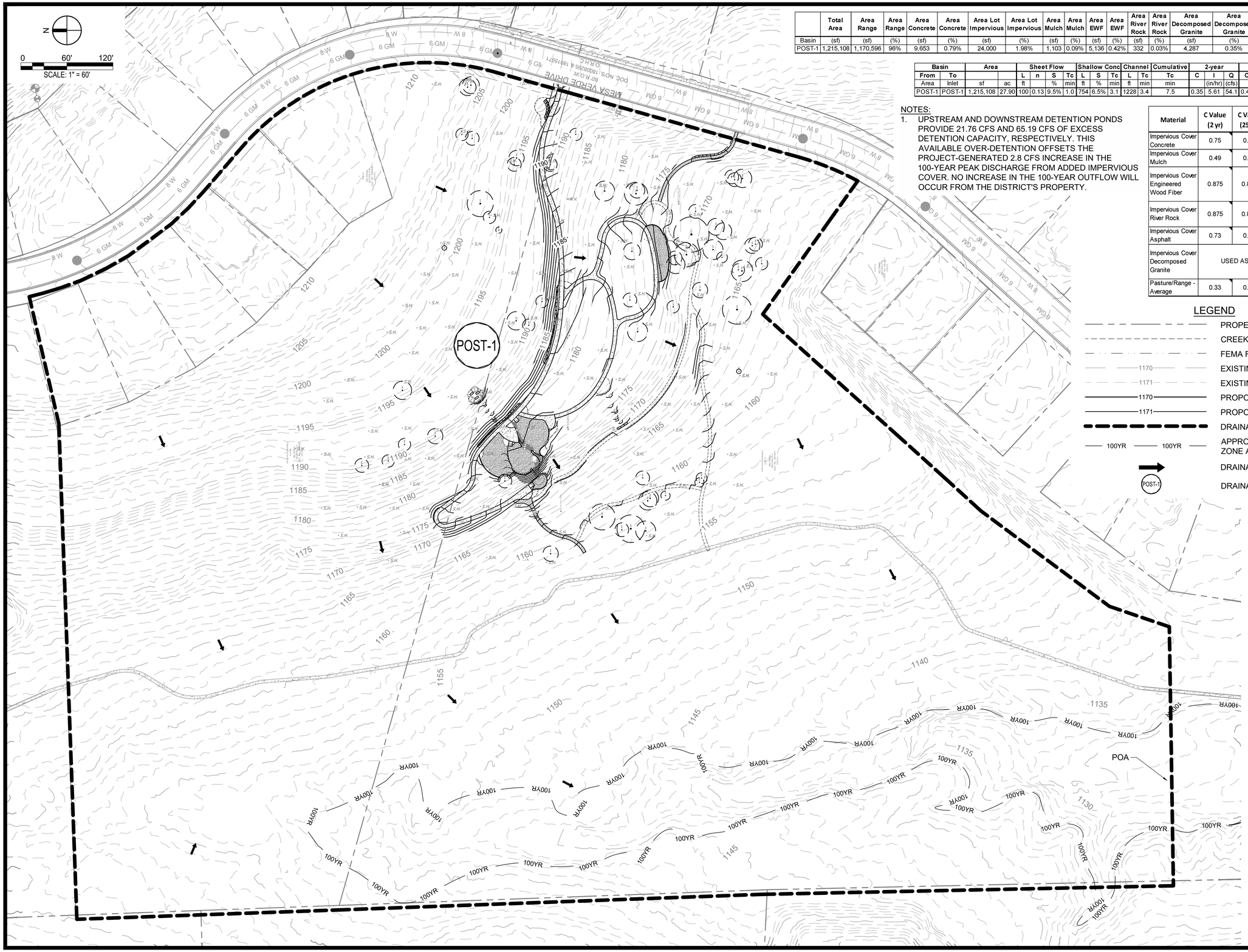

	Total Area	Area Range	Area Range	Area Concrete	Area Concrete	Area Lot Impervious	Area Lot Impervious	Area Mulch	Area Mulch	Area EWF	Area EWF	Area River Rock	Area River Rock	Area Decomposed Granite	Area Decomposed Granite	C-Value	C-Value	C-Value
Basin	(sf)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	(sf)	(%)	2 Yr	25 Yr	100 Yr
POST-1	1,215,108	1,170,596	96%	9,653	0.79%	24,000	1.98%	1,103	0.09%	5,136	0.42%	332	0.03%	4,287	0.35%	0.35	0.44	0.51

Basin		Area		Sheet Flow				Shallow Conc			Channel		Cumulative	2-year			25-year			100-year		
From	To			L	n	S	Tc	L	S	Tc	L	Tc	Tc	C	I	Q	C	I	Q	C	I	Q
Area	Inlet	sf	ac	ft		%	min	ft	%	min	ft	min	min		(in/hr)	(cfs)		in/hr	cfs		in/hr	cfs
POST-1	POST-1	1,215,108	27.90	100	0.13	9.5%	1.0	754	6.5%	3.1	1228	3.4	7.5	0.35	5.61	54.1	0.44	10.44	128.1	0.51	13.63	194.2

NOTES:

1. UPSTREAM AND DOWNSTREAM DETENTION PONDS PROVIDE 21.76 CFS AND 65.19 CFS OF EXCESS DETENTION CAPACITY, RESPECTIVELY. THIS AVAILABLE OVER-DETENTION OFFSETS THE PROJECT-GENERATED 2.8 CFS INCREASE IN THE 100-YEAR PEAK DISCHARGE FROM ADDED IMPERVIOUS COVER. NO INCREASE IN THE 100-YEAR OUTFLOW WILL OCCUR FROM THE DISTRICT'S PROPERTY.

Material	C Value (2 yr)	C Value (25 yr)	C Value (100 yr)
Impervious Cover Concrete	0.75	0.88	0.97
Impervious Cover Mulch	0.49	0.49	0.49
Impervious Cover Engineered Wood Fiber	0.875	0.875	0.875
Impervious Cover River Rock	0.875	0.875	0.875
Impervious Cover Asphalt	0.73	0.86	0.95
Impervious Cover Decomposed Granite	USED ASPHALT C		
Pasture/Range - Average	0.33	0.42	0.49

LEGEND

- PROPERTY LINE
- CREEK BUFFER
- FEMA FLOOD PLAIN
- 1170 EXISTING MAJOR CONTOURS
- 1171 EXISTING MINOR CONTOURS
- 1170 PROPOSED MAJOR CONTOURS
- 1171 PROPOSED MINOR CONTOURS
- DRAINAGE AREA
- 100YR 100YR APPROXIMATE LIMITS OF ZONE A FEMA FLOODPLAIN
- DRAINAGE ARROW
- POST-1 DRAINAGE AREA LABEL

STATE OF TEXAS
LAUREN BARZILLA
108483
REGISTERED PROFESSIONAL ENGINEER
2/5/2026

BURGESS & NIPLE INC.
235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737
PHONE: (512) 432-1000
PELS FIRM REGISTRATION NO. 10834

HAYS COUNTY WCID NO. 2
PINNACLE PARK IMPROVEMENTS
CZP

REVISIONS		
NO.	DESCRIPTION	DATE

JOB NO:	PR62787
DATE:	JAN 2026
DESIGNED BY:	B&N
DRAWN BY:	B&N
CHECKED BY:	LBB
APPROVED BY:	LBB
SCALE:	AS NOTED

PROPOSED DRAINAGE

SHEET IDENTIFICATION
C-103

SHEET: 6 OF 8

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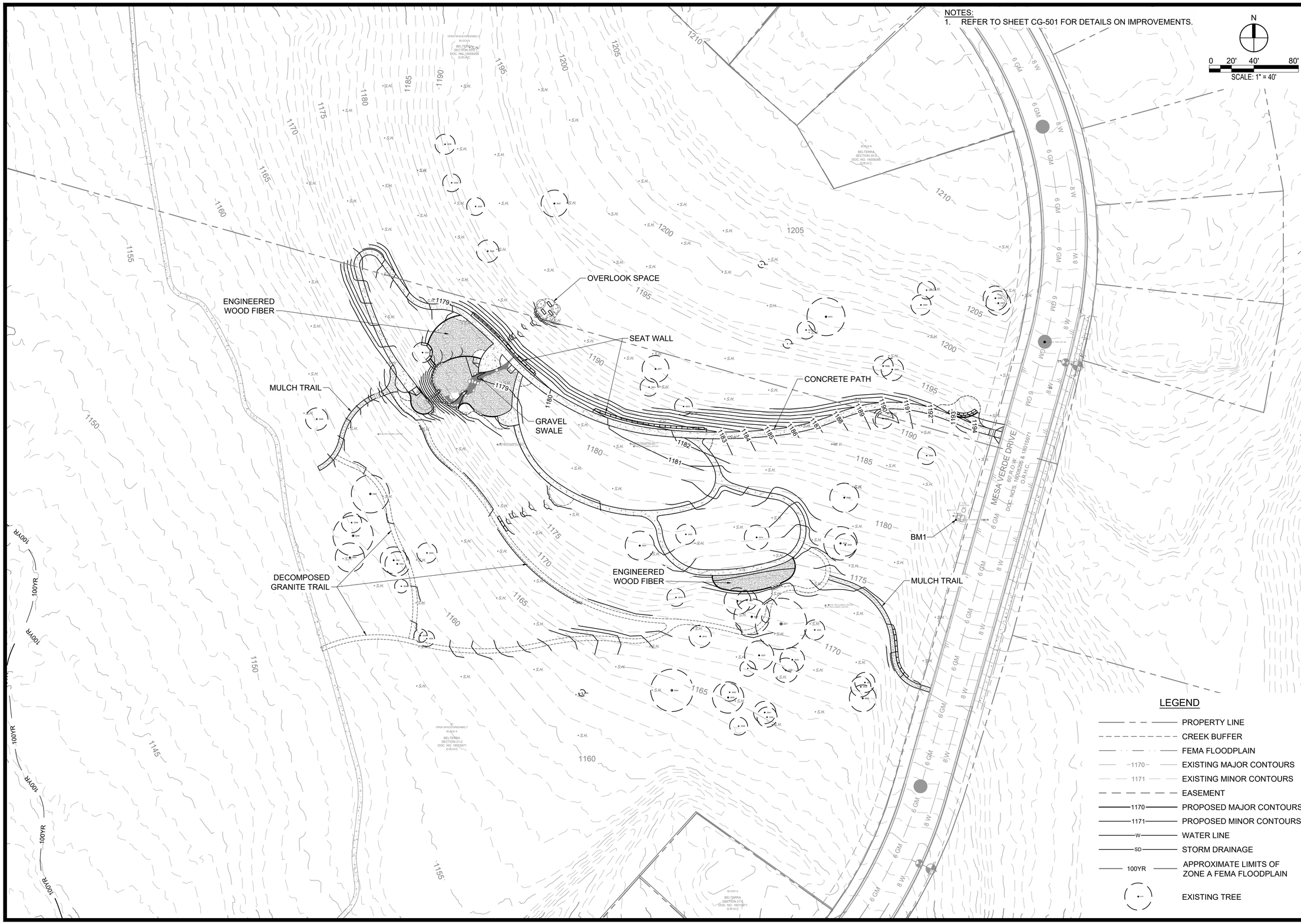
PLOTTED: 2/5/2026 2:55:24 PM

NOTES:
1. REFER TO SHEET CG-501 FOR DETAILS ON IMPROVEMENTS.

N

0 20' 40' 80'
SCALE: 1" = 40'



LEGEND

- PROPERTY LINE
- CREEK BUFFER
- FEMA FLOODPLAIN
- 1170 EXISTING MAJOR CONTOURS
- 1171 EXISTING MINOR CONTOURS
- EASEMENT
- 1170 PROPOSED MAJOR CONTOURS
- 1171 PROPOSED MINOR CONTOURS
- W WATER LINE
- SD STORM DRAINAGE
- 100YR APPROXIMATE LIMITS OF ZONE A FEMA FLOODPLAIN
- EXISTING TREE

STATE OF TEXAS
LAUREN BARZILLA
108483
REGISTERED PROFESSIONAL ENGINEER
2/5/2026

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235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737
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REVISIONS		
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DRAWN BY:	B&N
CHECKED BY:	LBB
APPROVED BY:	LBB
SCALE:	AS NOTED

OVERALL SITE PLAN

SHEET IDENTIFICATION
C-104

SHEET: 7 OF 8

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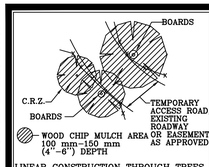
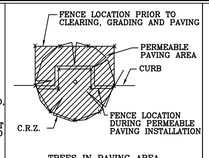
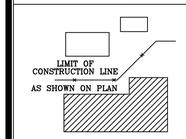


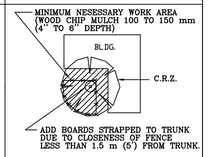
LINEAR CONSTRUCTION THROUGH TREES



TREES IN PAVING AREA



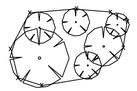
NATURAL AREAS



TREES NEAR CONSTRUCTION ACTIVITY

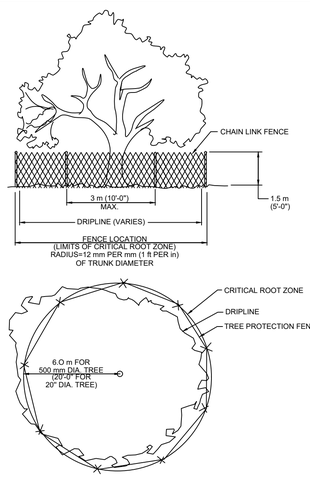
CRITICAL ROOT ZONE (C.R.Z.)
RADIUS = 12 mm PER mm
(1 FT. PER INCH)
OF TRUNK DIAMETER

INDIVIDUAL TREE

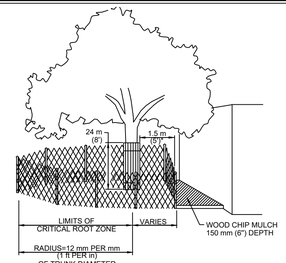


GROUP OF TREES

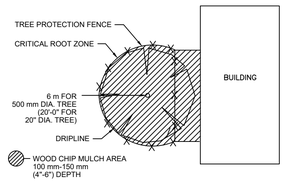
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE LOCATIONS	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S–1



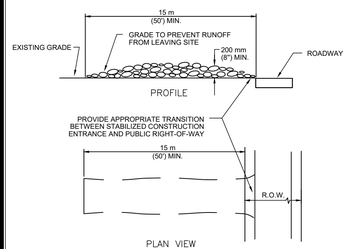
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROPTECTION FENCE TYPE A - CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-2



*AS NEEDED TO PROVIDE MINIMUM NECESSARY WORK SPACE. IF LESS THAN 1.5 m (5'), THEN ADD BOARDS STRAPPED TO TRUNK.

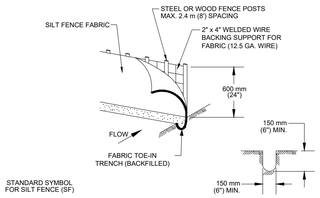


CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE MODIFIED TYPE A - CHAIN LINK	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-4



NOTES:
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE	
RECORD COPY SIGNED BY J. PATRICK MURPHY 5/23/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S–1



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTY AS NEEDED.

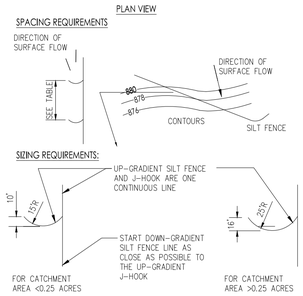
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S–1

RECOMMENDED SILT FENCE SPACING ON SLOPPING SITES

	SOIL TYPE		
SLOPE ANGLE	SILTY	CLAYS	SANDY
VERY STEEP (2:1)	50 FT.	75 FT.	100 FT.
STEEP (1:1)	75 FT.	100 FT.	125 FT.
MODERATE (4:1)	100 FT.	125 FT.	150 FT.
SLIGHT (10:1)	125 FT.	150 FT.	200 FT.



For more information see the LCRA WATER QUALITY MANAGEMENT TECHNICAL MANUAL
For questions or information call LCRA at (800) 776+5272 ext. 2324 or visit www.lcra.org

STATE OF TEXAS
LAUREN BARZILLA
108483
REGISTERED PROFESSIONAL ENGINEER
2/5/2026

BURGESS & NIPLE INC.
235 LEDGE STONE DRIVE
AUSTIN, TEXAS 78737
PHONE: (512) 432-1000
PELS FIRM REGISTRATION NO. 10834

HAYS COUNTY WCID NO. 2
PINNACLE PARK IMPROVEMENTS
CZP

REVISIONS	
NO.	DESCRIPTION	DATE

JOB NO:	PR62787
DATE:	JAN 2026
DESIGNED BY:	B&N
DRAWN BY:	B&N
CHECKED BY:	LBB
APPROVED BY:	LBB
SCALE:	AS NOTED

GENERAL DETAILS

SHEET IDENTIFICATION
CG-501

SHEET: 8 OF 8

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ATTACHMENT P – BMPs MEASURES FOR MIMIMIZING SURFACE STREAM CONTAMINATION

Temporary BMPs will be used to prevent pollutants from being conveyed downstream and ultimately entering surface streams. During the construction process, temporary BMPs will include silt fence and a stabilized construction entrance/exit.

There are no contaminates anticipated during or after construction. During construction, fuel storage tank(s) or oils used by construction equipment will not be stored on-site. After construction, the site will not be used for vehicle maintenance or to store materials that can pose a threat of contamination

Modification of a Previously Approved Contributing Zone Plan

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Transition Zone and Relating to 30 TAC 213.4(j), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

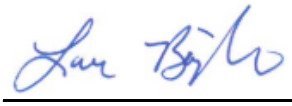
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Modification of a Previously Approved Contributing Zone Plan** is hereby submitted for TCEQ review and executive director approval. The request was prepared by:

Print Name of Customer/Agent: Lauren Barzilla

Date: 1/27/26

Signature of Customer/Agent:



Project Information

1. Current Regulated Entity Name: CN 601363419
   Original Regulated Entity Name: RN 107005035 and RN10933335
   Assigned Regulated Entity Number(s) (RN): RN 104710835
   Edwards Aquifer Protection Program ID Number(s): 11000550 and 11000730
   ☐ The applicant has not changed and the Customer Number (CN) is: _____
   ☒ The applicant or Regulated Entity has changed. A new Core Data Form has been provided.

2. ☒ **Attachment A: Original Approval Letter and Approved Modification Letters**. A copy of the original approval letter and copies of any modification approval letters are attached.

3. A modification of a previously approved plan is requested for (check all that apply):

- ☐ Any physical or operational modification of any best management practices or structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures;
- ☐ Any change in the nature or character of the regulated activity from that which was originally approved;
- ☐ A change that would significantly impact the ability to prevent pollution of the Edwards Aquifer and hydrologically connected surface water; or
- ☒ Any development of land previously identified in a contributing zone plan as undeveloped.

4. ☒ Summary of Proposed Modifications (select plan type being modified). If the approved plan has been modified more than once, copy the appropriate table below, as necessary, and complete the information for each additional modification.

CZP Modification Summary	***Approved Project***	***Proposed Modification***
Acres	84.01/109.76	0
Type of Development	Single Family Residental	Park
Number of Residential Lots	66/82	0
Impervious Cover (acres)	10.83/11.44	0.47
Impervious Cover (%)	10.4%/12.89%	_____
Permanent BMPs	Natural and Engineered VFS, and Sand Filter Ponds	n/a
Other	0	0

AST Modification Summary	***Approved Project***	***Proposed Modification***
Number of ASTs	0	0
Other	0	0

UST Modification Summary	***Approved Project***	***Proposed Modification***
Number of USTs	0	0
Other	0	0

5. ☒ **Attachment B: Narrative of Proposed Modification**. A detailed narrative description of the nature of the proposed modification is attached. It discusses what was approved, including previous modifications, and how this proposed modification will change the approved plan.

6. ☒ **Attachment C: Current Site Plan of the Approved Projec**t. A current site plan showing the existing site development (i.e., current site layout) at the time this application for modification is attached. A site plan detailing the changes proposed in the submitted modification is required elsewhere.
   - ☐ The approved construction has not commenced. The original approval letter and any subsequent modification approval letters are included as Attachment A to document that the approval has not expired.
   - ☒ The approved construction has commenced and has been completed. Attachment C illustrates that the site was constructed as approved.
   - ☐ The approved construction has commenced and has been completed. Attachment C illustrates that the site was **not** constructed as approved.
   - ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was constructed as approved.
   - ☐ The approved construction has commenced and has **not** been completed. Attachment C illustrates that, thus far, the site was **not** constructed as approved.

7. ☐ Acreage has not been added to or removed from the approved plan.
   ☒ Acreage has been added to or removed from the approved plan and is discussed in *Attachment B: Narrative of Proposed Modification*.

8. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

Attachment A – Original Approval Letter and Approved Modification Letters

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 16, 2017

Mr. Steve Yetts
LH Belterra, LLC
400 E. Colinas Blvd, Suite 1075
Irving, Texas 75039

Re: Edwards Aquifer: Williamson County
NAME OF PROJECT: Belterra Subdivision Sections 20-1 & 20-2; South East of Belterra Drive and Sawyer Ranch Road; Dripping Springs E.T.J., Texas
TYPE OF PLAN: Request for Approval of Contributing Zone Plan (CZP) with Optional Enhanced Measures (OEM);
30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer and RG348A-Optional Enhanced Measures for the Protection of Water Quality in the Edwards Aquifer
Edwards Aquifer Protection Program ID No. 11000730; RN109833335

Dear Mr. Yetts:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP-OEM Application for the above-referenced project submitted to the Austin Regional Office by Engineering Solutions, LLC. on behalf of LH Belterra, LLC on June 28, 2017. Final review of the CZP-OEM was completed after additional material was received on August 2, 4, and August 9, 2017. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213 Subchapter B and with the requirements of the TCEQ publication RG-348a, Optional Enhanced Measures for the Protection of Water Quality in the Edwards Aquifer, an Appendix to RG-348. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The proposed residential site is located on the Edwards Aquifer Contributing Zone. This project site, Belterra Sections 20-1 and 20-2, is part of a greater Belterra Subdivision. This site is within the Hays County WCID#2 jurisdiction that requires TCEQ's Optional Enhanced Measures (OEM).

PROJECT DESCRIPTION

This proposed CZP includes construction of two sections 20-1 and 20-2 of the greater Belterra Subdivision on a total of 84.01 acre site. The total acreage for the section 20-1 is 62.12 acres consisting a total of 53 lots, of which 51 of the lots will be single family lots and the remaining two will remain as open space/green-belt lots. The total acreage for the section 20-2 is 21.89 acres consisting a total of 17 lots, of which 15 of the lots will be single family lots and the remaining two will remain as open space/green-belt lots. The total impervious cover added by both Sections 20-1 and 20-2 is approximately 10.83 acres (12.89%). Approximately 2.55 acres of offsite impervious cover from the adjacent portion of Belterra Drive will be treated by BMPs proposed for Sections 20-1 and 20-2. Project wastewater will be disposed of by conveyance to the existing Hays County WCID#2 Wastewater Treatment Plant (WQ0014293-001).

GEOLOGY

According to the geologic assessment included with the application, the site is located on the Glen Rose Formation (Kgr(u)) of the Cretaceous age. The Glen Rose Formation consist of limestone, dolomite, and marl subdivided into two units by Corbula bed C; alternating resistant and recessive bed forming stair step topography; limestone aphanitic to fine grained, hard to soft and marly, light gray to yellowish gray; dolomite, fine grained, porous, yellowish brown; marine mega fossils include molluscan steinkerns, rudistids, oysters, and echinoids; upper part, relatively thinner bedded, more dolomitic, and less fossiliferous than the lower part, thickness about 220 feet; lower part more massive and about 160 feet thick, includes at top Corbula bed, C, with abundant steinkerns of Corbula harveyi (Hill) in an interval up to 5 feet thick; approximate thickness of Glen Rose Formation is about 380 feet. The Austin Regional Office site assessment conducted on August 15, 2017 revealed the site to be generally as described.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater, surface water will be conveyed to five vegetated filter strips, and five sand filter systems that were designed using the TCEQ technical guidance document, "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005)" , and RG348A-Optional Enhanced Measures for the Protection of Water Quality in the Edwards Aquifer will be used.

The required total suspended solids (TSS) treatment for this project is 9,900 pounds of TSS generated from 10.831 acres of impervious cover plus the 1,822 lbs of TSS generated from 2.55 acres of offsite impervious cover that is being treated by sand filter 4.

A mix of natural and engineered VFS will be used to treat approximately 4.19 acres of impervious cover with drainage area of 11.99 acres. Total required TSS removal by all of the VFS is 3,841 lbs and 4,195 lbs of TSS removal is provided. The Sand Filter A and Sand Filters 1 through 4 will be used to treat the remaining 6.64 acres of impervious cover from this proposed project plus 2.55 acres of offsite impervious cover. Required TSS removal by all of the sand filters is 7,881 lbs and 9,150 lbs of TSS removal is provided by all of the sand filters. Combined water quality volume provided by all of the sand filters is 64,183 cubic feet whereas the required water quality volume is 57,906 cubic feet.

Permanent BMPs and respective TSS load removal for Belterra Sections 20-1 and 20-2, contributing drainage areas, impervious cover and sizing are summarized in the following table.

BMP and TSS Load Removal Summary						
BMP	**Drainage Area (Acres)**	**Total Impervious Cover (Acres)**	**Required TSS Removal (lb)**	**Provided TSS Removal (lb)**	**Required Water Quality Volume (cf)**	**Provided Water Quality Volume (cf)**
VFS-1	1.70	0.57	525	574		
VFS-2	1.66	0.57	525	574		
VFS-3	3.55	1.33	1,217	1,325		
VFS-4	2.05	0.69	630	689		
VFS-5	3.03	1.03	944	1,033		
Sand Filter 1	4.07	1.68	1,535	1,745	11,653	11,795
Sand Filter 2	4.32	2.14	1,959	2,212	15,356	19,639
Sand Filter 3	2.17	0.82	747	852	5,740	7,291
Sand Filter4	22.55	1.43 2.55	3,640	4,341	25,157	25,458
Sand Filter A (section 21-2)	1.63	0.55	See Section 21-2 CZP Approval & Construction Plans			
TOTALS	46.74	13.37	11,722	13,345	57,906	64,183

Treatment design calculations were sealed by Mr. Stephen R. Delgado P.E. on August 3, 2017 to demonstrate that the proposed treatment load removal meets the TCEQ required treatment load removal. The approved measures meet the TCEQ required 80% removal of the increased load in TSS caused by the project.

SPECIAL CONDITIONS

I. Additional phases of this development will require approval of a CZP-OEM or CZP-OEM Modification as applicable prior to conducting additional regulated activities on the site.

II. All sediment and/or media removed during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
5. Any modification to the activities described in the referenced CZP-OEM application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.
7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
9. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
10. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals

exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

11. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

12. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

13. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

14. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

<u>After Completion of Construction:</u>

15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Contributing Zone Plan. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Ms. Anusuya K. Iyer of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

Shawn Stewart,
Water Section Manager
Austin Region Office
Texas Commission on Environmental Quality

CSS/aki

Enclosure: Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Rick Broun, General Manager, Hays Trinity Groundwater Conservation District
Ms. Brooke Leftwich, Environmental Compliance Specialist, Hays County
Ms. Michelle Fischer, City Administrator, City of Dripping Springs
Mr. Stephen Delgado, P.E., Texas Engineering Solutions, LLC, 3815 S. Capital of Texas Hwy. Plaza III, Suite 300, Austin, Texas 78704

COPY

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 9, 2017

Tommy Tucker
Crescent Belterra TX, LLC
7000 N Mopac Expy., Ste 300
Austin, TX 78731

Re: Edwards Aquifer, Hays County

NAME OF PROJECT: Crescent Belterra Phase 1 - Section 21-2; Located located southeast of the intersection of Belterra Dr. and Sawyer Ranch Rd.; Dripping Springs, Texas

TYPE OF PLAN: Request for Approval of a Contributing Zone Plan with Optional Enhanced Measures (CZP-OEM); 30 Texas Administrative Code (TAC) Chapter 213 Subchapter B Edwards Aquifer

Edwards Aquifer Protection Program ID No. 11000550; Regulated Entity No. RN107005035

Dear Mr. Tucker:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the CZP Application for the above-referenced project submitted to the Austin Regional Office by Steven Delgado, P.E. of Texas Engineering Solutions, LLC on behalf of Crescent Belterra TX, LLC on February 8, 2017. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) were selected and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed residential project will have an area of approximately 109.76 acres. It will include eighty-two (82) residential lots, streets and driveways. The impervious cover will be 11.44 acres (10.4 percent). Project wastewater will be disposed of by conveyance to the existing Hays County WCID #2 Wastewater Treatment Plant (WQ0014293-001).

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, a mix of natural and engineered vegetated filter strips (VFS), along with two (2) sand filters, designed using the TCEQ technical guidance document, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices (2005), will be constructed to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 10,631 pounds of TSS generated from the 11.63 acres of impervious cover. The approved measures meet the required 80 percent removal of the increased load in TSS caused by the project.

A mix of natural and engineered VFS will be used to treat 10.20 acres (approximately 3.40 acres of impervious cover).

Pond A will have a contributing drainage area of 20.38 acres with 5.29 acres of impervious cover. Pond A is designed to remove 5,617 lbs of TSS, will have a water quality volume of 29,239 ft^3 (23,107 ft^3 are required)

Pond B will have a contributing drainage area of 13.57 acres with 2.94 acres of impervious cover. Pond B is designed to remove 3,156 lbs of TSS, will have a water quality volume of 20,080 ft^3 (18,962 ft^3 are required)

One lot (0.28 acres) with approximately 0.09 acres of impervious cover, will not be treated. The ponds are oversized to account for this lot bypassing all water quality treatment.

SPECIAL CONDITIONS

I. All permanent pollution abatement measures shall be operational prior to occupancy of the facility.

II. All sediment and/or media removed from the water quality basin during maintenance activities shall be properly disposed of according to 30 TAC 330 or 30 TAC 335, as applicable.

III. This approval letter is being issued for regulated activities (as defined in Chapter 213) and for best management practices presented in the application. This approval does not constitute a water right permit or authorization from the TCEQ Dam Safety Program. Failure to obtain all necessary authorizations could result in enforcement actions. For more information on Water Rights Permits, please refer to:

http://www.tceq.state.tx.us/permitting/water_supply/water_rights/wr_amiregulated.html

For more information on the Dam Safety program, please refer to:

http://www.tceq.state.tx.us/compliance/field_ops/dam_safety/damsafetyprog.html

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.

3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved Contributing Zone Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.

5. Any modification to the activities described in the referenced CZP-OEM application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.

6. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the name of the approved plan and file number for the regulated activity, the date on which the regulated activity will commence, and the name of the prime contractor with the name and telephone number of the contact person.

7. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved Storm Water Pollution Prevention Plan (SWPPP) must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

During Construction:

8. During the course of regulated activities related to this project, the applicant or his agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.

9. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been significantly reduced. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

10. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.

11. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

12. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities

will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

13. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 5, above.

<u>After Completion of Construction:</u>

14. Owners of permanent BMPs and measures must insure that the BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the Austin Regional Office within 30 days of site completion.

15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through the Austin Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.

16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved CZP-OEM. If the new owner intends to commence any new regulated activity on the site, a new Contributing Zone Plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

17. A Contributing Zone Plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Contributing Zone Plan must be submitted to the Austin Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Kyle Virr, P.E. of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 239-1464.

Sincerely,

Shawn Stewart, Water Section Manager
Austin Region Office
Texas Commission on Environmental Quality

CSS/kmv

Enclosure: Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Steven Delgado, P.E. Texas Engineering Solutions, LLC
3815 S. Capital of Texas Hwy, Plaza III, Suite 300
Austin, TX 78704
Mr. Rick Broun, General Manager, Hays Trinity Groundwater Conservation District
Ms. Michelle Fischer, City Administrator, City of Dripping Springs

Change in Responsibility for Maintenance on Permanent Best Management Practices and Measures

The applicant is no longer responsible for maintaining the permanent best management practice (BMP) and other measures. The project information and the new entity responsible for maintenance is listed below.

Customer: _____

Regulated Entity Name: _____

Site Address: _____

City, Texas, Zip: _____

County: _____

Approval Letter Date: _____

BMPs for the project: _____

New Responsible Party: _____

Name of contact: _____

Mailing Address: _____

City, State: _____ Zip: _____

Telephone: _____ FAX: _____

_____ _____

Signature of New Responsible Party Date

I acknowledge and understand that I am assuming full responsibility for maintaining all permanent best management practices and measures approved by the TCEQ for the site, until another entity assumes such obligations in writing or ownership is transferred.

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 21, 2017

Tommy Tucker
Crescent Belterra TX, LLC
7000 N Mopac Expy., Ste 300
Austin, TX 78731

Re: Edwards Aquifer, Hays County
NAME OF PROJECT: Crescent Belterra Phase 1 - Section 21-2; Located southeast of the intersection of Belterra Dr. and Sawyer Ranch Rd.; Dripping Springs, Texas
TYPE OF PLAN: Clarification to an Approved Contributing Zone Plan (CZP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 11000550; Regulated Entity No. RN107005035

Dear Mr. Tucker:

The Texas Commission on Environmental Quality (TCEQ) received your request to correct an error on the approval letter dated May 8, 2017 for the above referenced project. Your request stated the details for Pond A were incorrect. Please see the corrected detailed information for Pond A below:

Pond A will have a contributing drainage area of 20.38 acres with 5.29 acres of impervious cover. Pond A is designed to remove 5,617 lbs of TSS, and will have a water quality volume of 35,800 ft^3 (35,087 ft^3 are required).

If you have any questions or require additional information, please contact Mr Kyle Virr, P.E. of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 239-1464.

Sincerely,

Shawn Stewart, Water Section Manager
Austin Region Office
Texas Commission on Environmental Quality

CSS/kmv

cc: Judy Anderson, P.E., C.F.M., Texas Engineering Solutions, LLC
3815 S. Capital of Texas Hwy, Plaza III, Suite 300
Austin, TX 78704

Attachment B – Narrative of Proposed Modifications

Hays County WCID No. 2 proposes to construct a District-owned park and trail facility, known as Pinnacle Park. The park will include both nature and concrete trails, along with a playscape area. It will be located on two lots spanning across two residential sections of the Belterra Subdivision: Belterra Section 21-2 and Belterra Section 20-2. The original CZP for these areas was submitted by the developer's engineer during the construction of the single-family development. This modification is being submitted by the District.

Based on the attached approval letters, the original CZP for Sections 20-1 and 20-2 provides a total suspended solids (TSS) removal capacity of 13,345 lbs, while only 9,900 lbs are required—resulting in an excess of 3,445 lbs. Section 21-2 requires removal of 10,631 lbs of TSS; however, the existing BMPs for that section remove 12,176 lbs, creating an excess of 1,545 lbs.

The Pinnacle Park project introduces an additional 422 lbs of pollutant load due to 0.47 acres of new impervious cover. Of this total, 45 lbs occur within Section 20-2 and 377 lbs within Section 21-1. Applying these loads reduces the existing TSS excesses as follows: Section 20-1/20-2 decreases from 3,445 lbs to 3,400 lbs, and Section 21-2 decreases from 1,545 lbs to 1,168 lbs.

Because the previously constructed water quality BMPs in Sections 20-1, 20-2, and 21-2 continue to provide treatment capacity beyond what is required, the additional impervious cover associated with the Pinnacle Park project can remain untreated. Therefore, no new water quality BMPs are proposed for this project.

See below for screen shots of the TCEQ's TSS removal Calculations Spreadsheet for each section:

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Pinnacle Park - Section 20-2
Date Prepared: 1/27/2026

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	9.64	acres
Predevelopment impervious area within the limits of the plan * =	0.55	acres
Total post-development impervious area within the limits of the plan* =	0.60	acres
Total post-development impervious cover fraction * =	0.06	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	45	lbs.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Pinnacle Park - Section 21-2**
Date Prepared: **1/27/2026**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	79.95	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	0.42	acres
Total post-development impervious cover fraction * =	**0.01**	
P =	**33**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**377**	lbs.

Attachment C – Current Site Plan of the Approved Project

CONSTRUCTION PLANS FOR
BELTERRA
SECTION 20-1 AND 20-2
STREET, DRAINAGE, AND UTILITY IMPROVEMENTS

UTILITIES

WATER & WASTEWATER
HAYS COUNTY W.C.I.D. No. 2
SEVERN TRENT OFFICES
14050 SUMMIT DRIVE, SUITE 113A
AUSTIN, TEXAS 78728
CONTACT: KRISTI HESTER
PHONE: 512.246.0498

GAS
PROPANE BELTERRA, LTD.
1406 CAMPCRAFT ROAD, SUITE 222
AUSTIN, TX 78746
512.272.5503

ELECTRIC
PEDERNALES ELECTRIC COOP
661 HIGHWAY 290 WEST
DRIPPING SPRINGS, TX 78620
512.858.5611

ONE-CALL
UTILITY LOCATING SERVICE
CONTRACTOR TO CALL BEFORE DIGGING!!!
PHONE: 1.800.245.4545

CONSULTANTS/CONTRACTORS

CIVIL ENGINEER
TEXAS ENGINEERING SOLUTIONS
3815 S. CAPITAL OF TEXAS HWY, SUITE 300
AUSTIN, TX 78704
CONTACT: STEPHEN R. DELGADO, P.E
PHONE: 512.904.0505

SURVEYOR
AUSTIN SPATIAL TECHNOLOGIES
P.O. BOX 1528
AUSTIN, TEXAS 78767
CONTACT: PAUL SAUVE JR., R.P.L.S.
PHONE: 512.573.6730

OWNER
LH BELTERRA, LLC
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD.,
SUITE 1075
IRVING, TX 75039

DEVELOPER
LH BELTERRA, LLC
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD.,
SUITE 1075
IRVING, TX 75039

FLOODPLAIN INFORMATION
I, STEPHEN R. DELGADO, A LICENSED PROFESSIONAL ENGINEER, DO HEREBY CERTIFY THAT NO PORTION OF THIS PROPERTY IS LOCATED WITHIN A DESIGNED 100-YEAR FLOOD ZONE AREA, AS DELINEATED ON THE FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL No.48209C0128F AND PANEL No.48209C0140F EFFECTIVE DATE OF SEPTEMBER 02, 2015, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. ADDITIONALLY, STORM WATER RUNOFF FROM THE 100-YEAR STORM EVENT SHALL BE CONTAINED WITHIN THE DRAINAGE FACILITIES TO BE LOCATED WITHIN THE RIGHT-OF-WAY AND/OR DRAINAGE EASEMENTS SHOWN ON THE ATTACHED PLAT.

LEGAL DESCRIPTION
KNOW ALL MEN BY THESE PRESENTS: THAT LH BELTERRA LLC, A DELAWARE LIMITED LIABLITY COMPANY, OWNER OF 62.12 ACRES OF LAND IN THE JAMES FLOYD SURVEY No. 175, IN HAYS COUNTY, TEXAS, BEING A PORTION OF A CALLED 256.854 ACRE TRACT AS CONVEYED TO IT BY VIRTUE OF SPECIAL WARRANTY DEED RECORDED IN INSTRUMENT NO. 17005989 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS, DO HEREBY SUBDIVIDE SAID 62.12 ACRE PORTION OF SAID 256.854 ACRE TRACT OF LAND IN ACCORDANCE WITH THE ATTACHED MAP OR PLAT TO BE KNOWN AS "BELTERRA SECTION 20-1" SUBJECT TO ANY EASEMENTS AND/OR RESTRICTIONS HERETOFORE GRANTED, AND DO HEREBY DEDICATE TO THE PUBLIC USE OF THE STREETS AND EASEMENTS SHOWN HEREON. IN ADDITION, LOT 11, BLOCK A, AND LOT 16, BLOCK C ARE HEREBY DEDICATED TO AND MAINTAINED BY HAYS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 2.

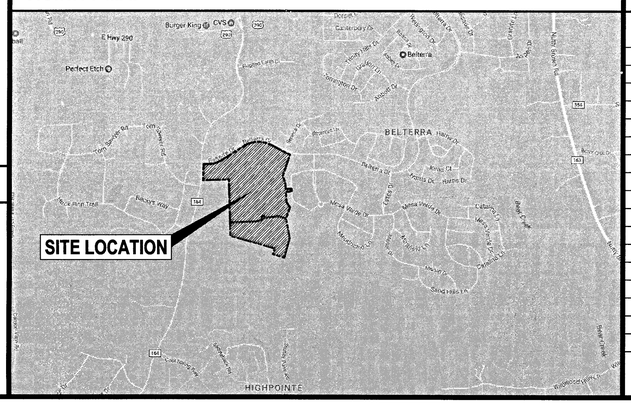
KNOW ALL MEN BY THESE PRESENTS: THAT LH BELTERRA LLC, A DELAWARE LIMITED LIABLITY COMPANY, OWNER OF 21.89 ACRES OF LAND IN THE JAMES FLOYD SURVEY No. 175, IN HAYS COUNTY, TEXAS, BEING A PORTION OF A CALLED 256.854 ACRE TRACT AS CONVEYED TO IT BY VIRTUE OF SPECIAL WARRANTY DEED RECORDED IN INSTRUMENT NO. 17005989 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS, DO HEREBY SUBDIVIDE SAID 21.89 ACRE PORTION OF SAID 256.854 ACRE TRACT OF LAND IN ACCORDANCE WITH THE ATTACHED MAP OR PLAT TO BE KNOWN AS "BELTERRA SECTION 20-2" SUBJECT TO ANY EASEMENTS AND/OR RESTRICTIONS HERETOFORE GRANTED, AND DO HEREBY DEDICATE TO THE PUBLIC USE OF THE STREETS AND EASEMENTS SHOWN HEREON. IN ADDITION, LOT 10, BLOCK A, AND LOT 7, BLOCK B ARE HEREBY DEDICATED TO AND MAINTAINED BY HAYS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 2.

NOTES
1. THIS SITE IS LOCATED IN HAYS COUNTY.
2. THIS SITE IS NOT LOCATED WITHIN THE EDWARD'S AQUIFER RECHARGE ZONE, BUT IS LOCATED IN THE EDWARDS AQUIFER CONTRIBUTING ZONE.
3. THIS SITE IS LOCATED ENTIRELY WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS.
4. THIS SITE IS LOCATED WITHIN THE FLOOD INSURANCE RATE MAP NO. 48209C0140F AND 48209C0128F, EFFECTIVE DATE OF SEPTEMBER 02, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. NO PORTION OF ANY RESIDENTIAL LOT WILL BE LOCATED WITHIN A DEFINED 100-YEAR OLD FLOODPLAIN.
5. WATER SERVICE WILL BE PROVIDED TO EACH LOT BY HAYS COUNTY WCID No. 2.
6. ORGANIZED WASTEWATER SERVICE WILL BE PROVIDED TO EACH LOT BY HAYS COUNTY WCID NO. 2.
7. RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT, THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEER.

NOTE TO CONTRACTOR
BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE, HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM 1-800-245-4545, OR THE OWNER OF EACH INDIVIDUAL UTILITY, FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION.

ENVIRONMENTAL INSPECTION HAS THE AUTHORITY TO MODIFY/CHANGE EROSION AND SEDIMENTATION CONTROLS TO KEEP THE PROJECT IN COMPLIANCE, AS PER SECTION 25-8-183 OF THE CITY OF AUSTIN LAND DEVELOPMENT CODE.

VICINITY MAP


REVISION BLOCK

NO.	REVISION DESCRIPTION	REVISE (R), ADD (A), VOID (V), SHEET #	TOTAL # SHEETS	NET CHANGE IMP. COVER SQ. FT.	TOTAL SITE IMP. COVER SQ. FT./ %	APPROVED/ DATE
1	Median relocation	(R): 6-8, 11, 13, 14, 16, 25, 26, 28, 29, 31, 35	33	0	N/A	10/18/17
2	Manhole addition	(R): 26, 31	2	0	N/A	11/20/17
3	Manhole addition	(R): 26, 33	2	0	N/A	12/07/17

SHEET LIST TABLE

1 COVER SHEET
2 FINAL PLAT-SECTION 20-1: SHEETS 1 & 2 OF 3
3 FINAL PLAT-SECTION 20-1: SHEETS 3 OF 3
4 FINAL PLAT-SECTION 20-2: SHEETS 1 & 2
5 GENERAL NOTES
6 ENVIRONMENTAL PROTECTION PLAN
7 GRADING PLAN
8 PLAN & PROFILE: MESA VERDE DRIVE, STA: 1+00.00-11+50.00
9 PLAN & PROFILE: MESA VERDE DRIVE, STA: 11+50.00-24+00.00
10 PLAN & PROFILE: MESA VERDE DRIVE, STA: 24+00.00-END
11 PLAN & PROFILE: ENCANTO PLACE, STA: 1+00.00-12+50.00
12 PLAN & PROFILE: ENCANTO PLACE, STA: 12+50.00-END
13 DRAINAGE AREA MAP: EXISITING CONDITIONS AND DEVELOPED CONDITIONS
14 DRAINAGE AREA MAP: STORM SEWER SYSTEM
15 DRAINAGE CALCULATIONS
16 PLAN & PROFILE: STORM SEWER MAIN 'F' AND 'B', STA: 0+50-END
17 PLAN & PROFILE: STORM SEWER MAIN 'C', STA: 0+50-END
18 PLAN & PROFILE: STORM SEWER MAIN 'D', STA: 0+50-END
19 PLAN & PROFILE: POND 1
20 PLAN & PROFILE: POND 2
21 PLAN & PROFILE: POND 3
22 PLAN & PROFILE: POND 4
23 POND NOTES AND DETAILS
24 PLAN & PROFILE: DETENTION POND
25 WATER DISTRIBUTION AND TREATED EFFLUENT PLAN
26 WASTEWATER COLLECTION PLAN
27 PLAN & PROFILE: WASTEWATER MAIN 'A', STA: 0+50-9+50
28 PLAN & PROFILE: WASTEWATER MAIN 'A', STA: 9+50-END
29 PLAN & PROFILE: WASTEWATER MAIN 'B', STA: 0+50-10+50
30 PLAN & PROFILE: WASTEWATER MAIN 'B', STA: 10+50-END
31 PLAN & PROFILE: WASTEWATER MAIN 'C', STA: 0+50-10+50
32 PLAN & PROFILE: WASTEWATER MAIN 'C', STA: 10+50-END
33 PLAN & PROFILE: WASTEWATER MAIN 'D', STA: 0+50-END
34 ENVIRONMENTAL PROTECTION DETAILS
35 STREET DETAILS
36 STORM SEWER DETAILS
37 WATER DETAILS 1 OF 2
38 WATER DETAILS 2 OF 2
39 WASTEWATER DETAILS
40 TxDOT DETAILS

REVIEWED BY:

ESD #6	DATE 9/1/17
HAYS COUNTY	DATE 8/25/17
HAYS COUNTY W.C.I.D. #2	DATE 8/29/17
CITY OF DRIPPING SPRINGS: CITY ADMINISTRATOR	DATE 8/31/17
CITY OF DRIPPING SPRINGS: PLANNING DIRECTOR	DATE N/A
CITY OF DRIPPING SPRINGS: CITY ENGINEERING	DATE 8/31/17

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD.,
SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:
AUSTIN SPATIAL
TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION

EDITED: May 21, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

COVER SHEET

E:\Private\Belterra\Cresent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-CVR.dwg

STATE OF TEXAS §
COUNTY OF HAYS §

KNOW ALL MEN BY THESE PRESENTS: THAT LH BELTERRA LLC, A DELAWARE LIMITED LIABLITY COMPANY, OWNER OF 62.12 ACRES OF LAND IN THE JAMES FLOYD SURVEY No. 175, IN HAYS COUNTY, TEXAS, BEING A PORTION OF A CALLED 256.854 ACRE TRACT AS CONVEYED TO IT BY VIRTUE OF SPECIAL WARRANTY DEED RECORDED IN INSTRUMENT NO. 17005989 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS, DO HEREBY SUBDIVIDE SAID 62.12 ACRE PORTION OF SAID 256.854 ACRE TRACT OF LAND IN ACCORDANCE WITH THE ATTACHED MAP OR PLAT TO BE KNOWN AS

"BELTERRA SECTION 20-1"

SUBJECT TO ANY EASEMENTS AND/OR RESTRICTIONS HERETOFORE GRANTED, AND DO HEREBY DEDICATE TO THE PUBLIC USE OF THE STREETS AND EASEMENTS SHOWN HEREON. IN ADDITION, LOT 37, BLOCK A, AND LOT 31 BLOCK B ARE HEREBY DEDICATED TO AND MAINTAINED BY HAYS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 2.

WITNESS MY HAND THIS THE _____ DAY OF _____, 20____.

LH BELTERRA LLC, A DELEWARE LIMITED LIABILITY COMPANY

BY:_____

_____
PRINTED NAME AND TITLE

STATE OF TEXAS §
COUNTY OF HAYS §

ON _____, BEFORE ME, PERSONALLY APPEARED _____, WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME IN HIS AUTHORIZED CAPACITY, AND THAT BY HIS SIGNATURE ON THE INSTRUMENT THE PERSON, OR THE ENTITY UPON BEHALF OF WHICH THE PERSON ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF TEXAS THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND AND SEAL

SIGNATURE:_____

MY COMMISSION EXPIRES:_____

IN ORDER TO PROMOTE SAFE USE OF ROADWAYS AND PRESERVE THE CONDITIONS OF PUBLIC ROADWAYS, NO DRIVEWAY CONSTRUCTED ON ANY LOT WITHIN THIS SUBDIVISION SHALL BE PERMITTED ACCESS ONTO A PUBLICLY DEDICATED ROADWAY UNLESS (A) A DRIVEWAY PERMIT HAS BEEN ISSUED BY THE TRANSPORTATION DEPARTMENT OF HAYS COUNTY AND (B) THE DRIVEWAY SATISFIES THE REQUIREMENT FOR DRIVEWAYS SET FORTH IN CHAPTER 721 OF THE HAYS COUNTY DEVELOPMENT REGULATIONS.

IN APPROVING THIS PLAT BY THE COMMISSIONERS COURT OF HAYS COUNTY, TEXAS, IT IS UNDERSTOOD THAT THE BUILDING OF ALL STREETS, ROADS, AND OTHER PUBLIC THOROUGHFARES DELINEATED AND SHOWN ON THIS PLAT, AND ALL BRIDGES AND CULVERTS NECESSARY TO BE CONSTRUCTED OR PLACED IN SUCH STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES, OR IN CONNECTION THEREWITH SHALL BE THE RESPONSIBILITY OF THE OWNER AND / OR THE DEVELOPER OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PRESCRIBED BY THE COMMISSIONERS COURT OF HAYS COUNTY, TEXAS AND THE COMMISSIONERS OF HAYS COUNTY, TEXAS, ASSUMES NO OBLIGATION TO BUILD THE STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES SHOWN ON THIS PLAT OR OF CONSTRUCTING ANY BRIDGES OR CULVERTS IN CONNECTION THEREWITH.

OWNER / DEVELOPER:
LH BELTERRA LLC
400 E. LAS COLINAS BLVD.
IRVING,TX 75039
469-513-5600

SURVEYOR:
AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TEXAS 78739
(512) 573-6730

ENGINEER:
TEXAS ENGINEERING SOLUTIONS
3815 S. CAPITAL OF TEXAS HIGHWAY
SUITE 300
AUSTIN, TEXAS 78704
O: 512-904-0505
F: 512-904-0509
TBPE NO. 11206

FINAL PLAT NOTES:

1. THIS PLAT IS LOCATED ENTIRELY WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS AND ENTIRELY WITHIN THE BOUNDARY OF THE HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2.
2. NO PORTION OF THIS PLAT LIES WITHIN THE BOUNDARIES OF THE EDWARDS AQUIFER RECHARGE ZONE.
3. THIS PLAT LIES WITHIN THE BOUNDARIES OF THE CONTRIBUTING ZONE OF THE EDWARDS AQUIFER.
4. THIS PLAT IS LOCATED WITHIN THE BOUNDARY OF THE DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT.
5. THIS PLAT IS BASED UPON TOPOGRAPHICAL INFORMATION TAKEN FROM AN AERIAL SURVEY BY PROTERRA AERIAL MAPPING, INC. DATED MAY 13, 2004.
6. NO PORTION OF THIS PROPERTY IS LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD PLAIN AS DELINEATED ON THE FLOOD INSURANCE RATE MAP NO. 48209C0120 F, AND PANEL No. 48209C0140F EFFECTIVE DATE OF SEPTEMBER 2, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AND IS CONTAINED WITHIN A DRAINAGE EASEMENT.
7. THERE ARE NO AREAS WITHIN THE PROPOSED SUBDIVISION WITH SLOPES GREATER THAN 35%.
8. WATER SERVICE WILL BE PROVIDED TO EACH RESIDENTIAL LOT BY HAYS COUNTY WCID NO. 2. NO INDIVIDUAL WATER WELLS WILL BE ALLOWED.
9. ORGANIZED WASTEWATER SERVICE WILL BE PROVIDED TO EACH RESIDENTIAL LOT BY HAYS COUNTY WCID NO. 2. NO INDIVIDUAL ON-SITE SEWAGE FACILITY WILL BE ALLOWED.
10. ELECTRIC SERVICE WILL BE PROVIDED BY THE PEDERNALES ELECTRIC COOPERATIVE.
11. TELEPHONE SERVICE WILL BE PROVIDED BY AT&T.
12. ORGANIZED GAS SERVICE WILL BE PROVIDED BY TEXAS COMMUNITY PROPANE.
13. MINIMUM FRONT SETBACK SHALL BE 25 FEET. UNLESS NOTED OTHERWISE.
14. MINIMUM REAR YARD SETBACK SHALL BE 10 FEET.
15. MINIMUM SIDE AND INTERIOR YARD SETBACKS SHALL BE 5 FEET, UNLESS OTHERWISE NOTED.
16. UTILITY EASEMENTS OF 10 FEET SHALL BE LOCATED ALONG EACH SIDE OF DEDICATED RIGHT-OF-WAY.
17. ALL STREETS SHALL BE DESIGNED IN ACCORDANCE WITH APPLICABLE CITY OF DRIPPING SPRINGS REQUIREMENTS AND APPROVED BY THE HAYS COUNTY TRANSPORTATION DEPARTMENT AND UPON ACCEPTANCE SHALL BE DEDICATED TO THE COUNTY FOR MAINTENANCE.
18. ALL LOTS WILL ACCESS PUBLIC STREETS VIA CONCRETE DRIVEWAYS. STREETS TO BE ACCESSED WILL BE CONSTRUCTED WITH CURB AND GUTTER; THEREFORE NO DRIVEWAY CULVERTS WILL BE NECESSARY.
19. ENCANTO DRIVE WILL BE CONSTRUCTED AS A LOCAL STREET WITH 28-FOOT ROADWAY WIDTH WITHIN 50-FOOT RIGHTS-OF-WAY. MESA VERDE DRIVE WILL BE A RESIDENTIAL COLLECTOR. THE ENTRANCE OF MESA VERDE DRIVE WILL BE DIVIDED AND TRANSITION FROM A 90-FOOT RIGHT-OF-WAY TO A 60-FOOT RIGHT-OF-WAY WHICH WILL CONTINUE THROUGHOUT THE SUBDIVISION WITH A 40 FOOT WIDE ROADWAY.
20. LINEAR FOOTAGE OF MESA VERDE DRIVE: 2237 L.F.
    LINEAR FOOTAGE OF ENCANTO PLACE: 1297 L.F.
    TOTAL LINEAR FOOTAGE OF LOCAL STREET IMPROVEMENTS: 3,534 L.F.
21. THIS PLAT HAS BEEN PREPARED IN ACCORDANCE WITH THE CITY OF DRIPPING SPRINGS REQUIREMENTS AS APPLICABLE TO THIS DEVELOPMENT.
22. AREA WITHIN NEW ROAD RIGHT-OF-WAY = 4.64 ACRES.
23. DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HAYS COUNTY REQUIREMENTS OR AS APPROVED BY THE HAYS COUNTY TRANSPORTATION DEPARTMENT.
24. WATER QUALITY BUFFER ZONE (BUFFER AREAS) RESTRICTIONS:
    A. LIMIT DISTURBANCE OF BUFFER AREAS AS MUCH AS PRACTICAL DURING CONSTRUCTION.
    B. CONSTRUCTION ALLOWED IN THE BUFFER AREAS INCLUDES UTILITIES, DRAINAGE FACILITIES, WATER QUALITY FACILITIES, FENCES AND LOW IMPACT PARKS.
    C. UTILITY CONSTRUCTION AREAS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AFTER CONSTRUCTION.
    D. LOW IMPACT PARK DEVELOPMENT WITHIN THE BUFFER AREAS SHOULD BE LIMITED TO TRAILS, PICNIC FACILITIES, AND SIMILAR CONSTRUCTION THAT DOES NOT SIGNIFICANTLY ALTER THE EXISTING VEGETATION.
25. THIS PLAT IS SUBJECT TO THE "FOSTER RANCH DEVELOPMENT AGREEMENT", DATED APRIL 19, 2001 AND IS COMPLIANT WITH SAID DEVELOPMENT AGREEMENT.
26. OPEN SPACE/GREENBELT LOTS ARE NOT INTENDED FOR RESIDENTIAL DEVELOPMENT.

STATE OF TEXAS §
COUNTY OF TRAVIS §

KNOW ALL MEN BY THESE PRESENTS, THAT I, THE UNDERSIGNED, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS PLAT COMPLIES WITH THE SURVEY RELATED REQUIREMENTS OF THE HAYS COUNTY DEVELOPMENT REGULATIONS AND THE CITY OF DRIPPING SPRINGS AND FURTHER CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE AND IS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND AND THAT THE CORNER MONUMENTS WERE PROPERLY PLACED UNDER MY SUPERVISION.

PAUL C. SAUVE, JR.
REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF TEXAS No. 2518

AUGUST 10, 2017
DATE

STATE OF TEXAS REGISTERED PAUL C. SAUVE, JR. 2518 PROFESSIONAL LAND SURVEYOR

STATE OF TEXAS §
COUNTY OF TRAVIS §

I, STEPHEN R. DELGADO, A LICENSED PROFESSIONAL ENGINEER, DO HEREBY CERTIFY THAT NO PORTION OF THIS PROPERTY IS LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD ZONE AREA, AS DELINEATED ON THE FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL No. 48209C0128F AND PANEL No. 48209C0140F EFFECTIVE DATE OF SEPTEMBER 02, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. ADDITIONALLY, STORM WATER RUNOFF FROM THE 100-YEAR STORM EVENT SHALL BE CONTAINED WITHIN THE DRAINAGE FACILITIES TO BE LOCATED WITHIN THE RIGHTS-OF-WAY AND/OR DRAINAGE EASEMENTS SHOWN ON THE ATTACHED PLAT.

_____ _____
STEPHEN R. DELGADO, PE DATE
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS No. 99342

BELTERRA SECTION 20-1 IS LOCATED ENTIRELY WITHIN THE BOUNDARIES AND SERVICE AREA OF HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2. WATER AND WASTEWATER SERVICE, AS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, WILL BE PROVIDED TO ALL LOTS REQUIRING SERVICE THROUGH THE DISTRICT'S PUBLIC WATER AND WASTEWATER SYSTEMS.

_____ _____
THOMAS PATRICK PHILLIPS, PRESIDENT DATE
HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2

SEWAGE DISPOSAL / INDIVIDUAL WATER SUPPLY CERTIFICATION, TO-WIT:

NO STRUCTURE IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO AN INDIVIDUAL WATER SUPPLY OR A STATE - APPROVED COMMUNITY WATER SYSTEM, DUE TO DECLINING WATER SUPPLIES AND DIMINISHING WATER QUALITY. PROSPECTIVE PROPERTY OWNERS ARE CAUTIONED BY HAYS COUNTY TO QUESTION THE SELLER CONCERNING GROUND WATER AVAILABILITY. RAIN WATER COLLECTION IS ENCOURAGED AND IN SOME AREAS MAY OFFER THE BEST RENEWABLE WATER RESOURCE.

NO STRUCTURE IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO A PUBLIC SEWER SYSTEM.

NO CONSTRUCTION OR OTHER DEVELOPMENT WITHIN THIS SUBDIVISION MAY BEGIN UNTIL ALL HAYS COUNTY DEVELOPMENT PERMIT REQUIREMENTS HAVE BEEN MET.

_____ _____
JAMES C. GARZA, DIRECTOR DATE
HAYS COUNTY DEVELOPMENT & COMMUNITY SERVICES

_____ _____
TOM POPE, CFM DATE
HAYS COUNTY FLOODPLAIN ADMINISTRATOR

STATE OF TEXAS :
COUNTY OF HAYS :

I, THE UNDERSIGNED, DIRECTOR OF THE HAYS COUNTY DEVELOPMENT AND COMMUNITY SERVICES DEPARTMENT, HEREBY CERTIFY THAT THIS SUBDIVISION PLAT CONFORMS TO ALL HAYS COUNTY REQUIREMENTS AS STATED IN THE INTERLOCAL COOPERATION AGREEMENT BETWEEN HAYS COUNTY AND THE CITY OF DRIPPING SPRINGS FOR SUBDIVISION REGULATION WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS.

_____
JAMES C. GARZA, DIRECTOR
HAYS COUNTY DEVELOPMENT & COMMUNITY SERVICES

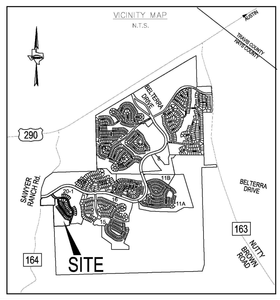
BELTERRA SECTION 20-1 HAS BEEN SUBMITTED AND CONSIDERED BY THE CITY OF DRIPPING SPRINGS AS A FINAL PLAT FOR ADMINISTRATIVE APPROVAL PURSUANT TO ORDINANCE 1230.09, AND HAS BEEN FOUND TO COMPLY WITH THE CITY'S CODE OF ORDINANCES, AND IS HEREBY APPROVED ADMINISTRATIVELY.

_____ _____
MICHELLE FISCHER, CITY ADMINISTRATOR DATE
CITY OF DRIPPING SPRINGS

STATE OF TEXAS :
COUNTY OF HAYS :

I, LIZ Q. GONZALEZ, COUNTY CLERK OF HAYS COUNTY, TEXAS DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IN WRITING WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE _____ DAY OF _____, 20___ A.D. AT _____ O'CLOCK, ___M. IN THE PLAT RECORDS OF HAYS COUNTY, TEXAS IN DOCUMENT NO. _____ WITNESS MY HAND AND SEAL OF OFFICE, THIS THE _____ DAY OF _____, 20___ A.D.

_____
LIZ Q. GONZALEZ
COUNTY CLERK,
HAYS COUNTY, TEXAS

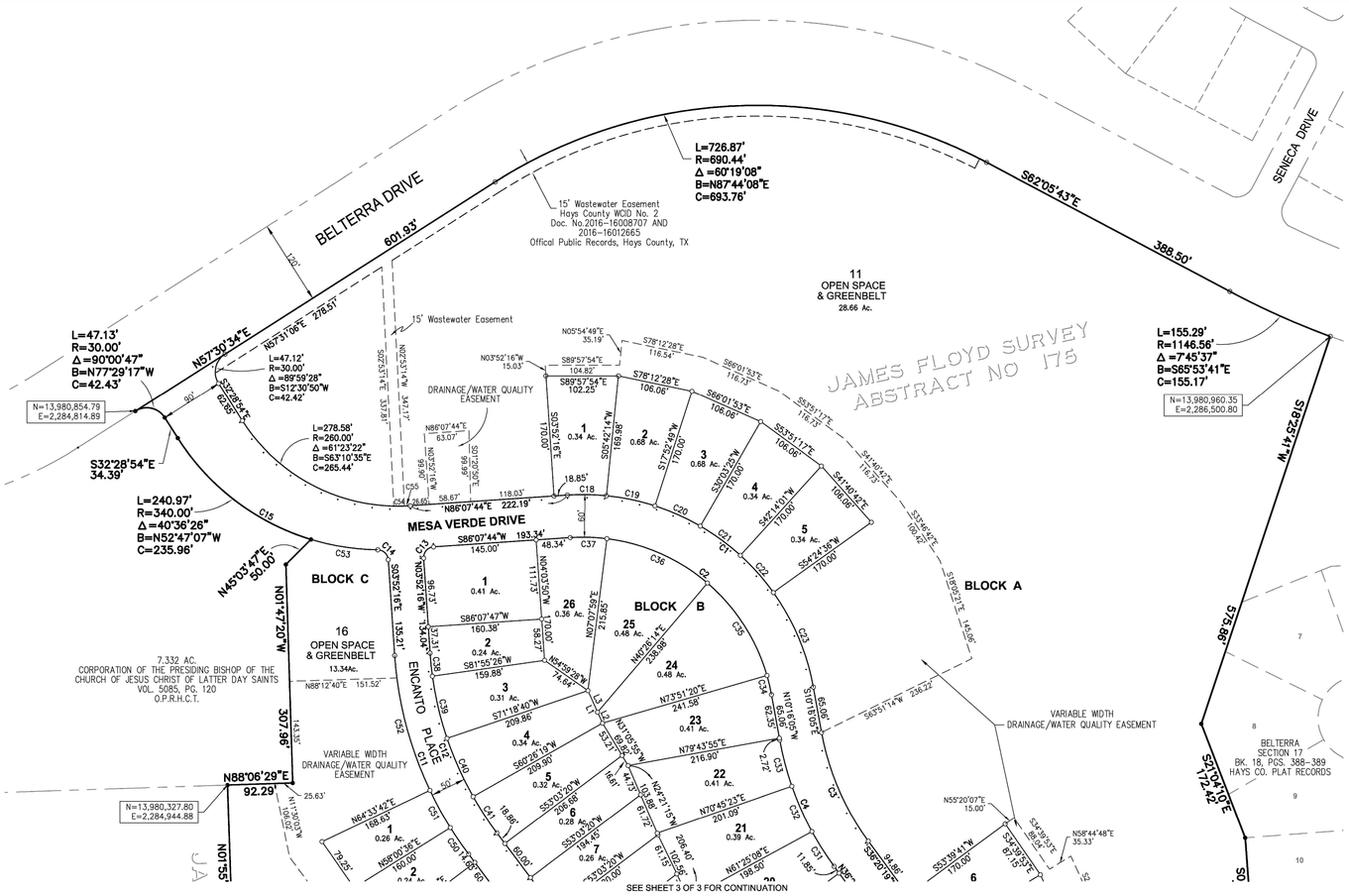


PROJECT:	BELTERRA SECTION 20-1 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	JUNE 2017
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

Texas Engineering Solutions
3815 S. CAPITAL OF TEXAS HWY, STE. 300 AUSTIN, TEXAS 78746 O: 512-904-0505 F: 512-904-0509 TBPE NO. 11206
AUSTIN SPATIAL TECHNOLOGIES, LLC
LAND SURVEYORS - GEOMATIC SPECIALISTS
www.austinspatial.com PH: 512-284-0284

BELTERRA SECTION 20-1

SHEET 1 OF 3



TOTAL NO. SINGLE FAMILY LOTS: 51 (15.48 AC.)
TOTAL NO. GREENBELT, & DRAINAGE EASEMENT LOTS: 2 (42.00 AC.)
TOTAL NO. BLOCKS: 3

LOT AREA	57.48 AC.
STREET ROW AREA	4.64 AC.
TOTAL AREA	62.12 AC.

CENTERLINE STREET LINEAR FOOTAGE			
STREET NAME	ROW WIDTH	LENGTH	TYPE
ENCANTO PLACE	50'	1297'	LOCAL
MESA VERDE DRIVE	60'/VARIES	2237'	LOCAL
TOTAL LINEAR FEET OF STREET ROW = 3,534			

LOT SIZE	NO.
>10 ACRES	1
5 TO 10 ACRES	1
2 TO 5 ACRES	0
1 TO 2 ACRES	0
< 1 ACRE	51

BM-CM-1
Iron rod found in concrete
southeast of the north corner
of Lot 41, Block B, Belterra Phase 4,
Section 1B.
Elevation = 1111.53' (NGVD 29)

TBM-4
"o" cut in concrete of electric
transformer pad, north side of Belterra
Blvd., 76'+/- SE of southeast corner
of Lot 12, Block B Belterra Phase 4,
Section 1B
Elevation = 1141.30' (NGVD 29)

LEGEND:

●	IRON ROD WITH CAP FOUND
○	IRON ROD WITH CAP SET
✱	COTTON SPINDLE SET
▲	MAG NAIL SET
⊠	CONCRETE MONUMENT SET
D.E.	DRAINAGE ESMT.
W.L.E.	WATER LINE ESMT.
W.W.E.	WASTEWATER EASEMENT
· · · · · · · ·	SIDEWALK LOCATION
O.P.R.H.C.T.	OFFICIAL PUBLIC RECORDS HAYS COUNTY, TEXAS

PROJECT:	BELTERRA SECTION 20-1 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	JUNE 2017
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

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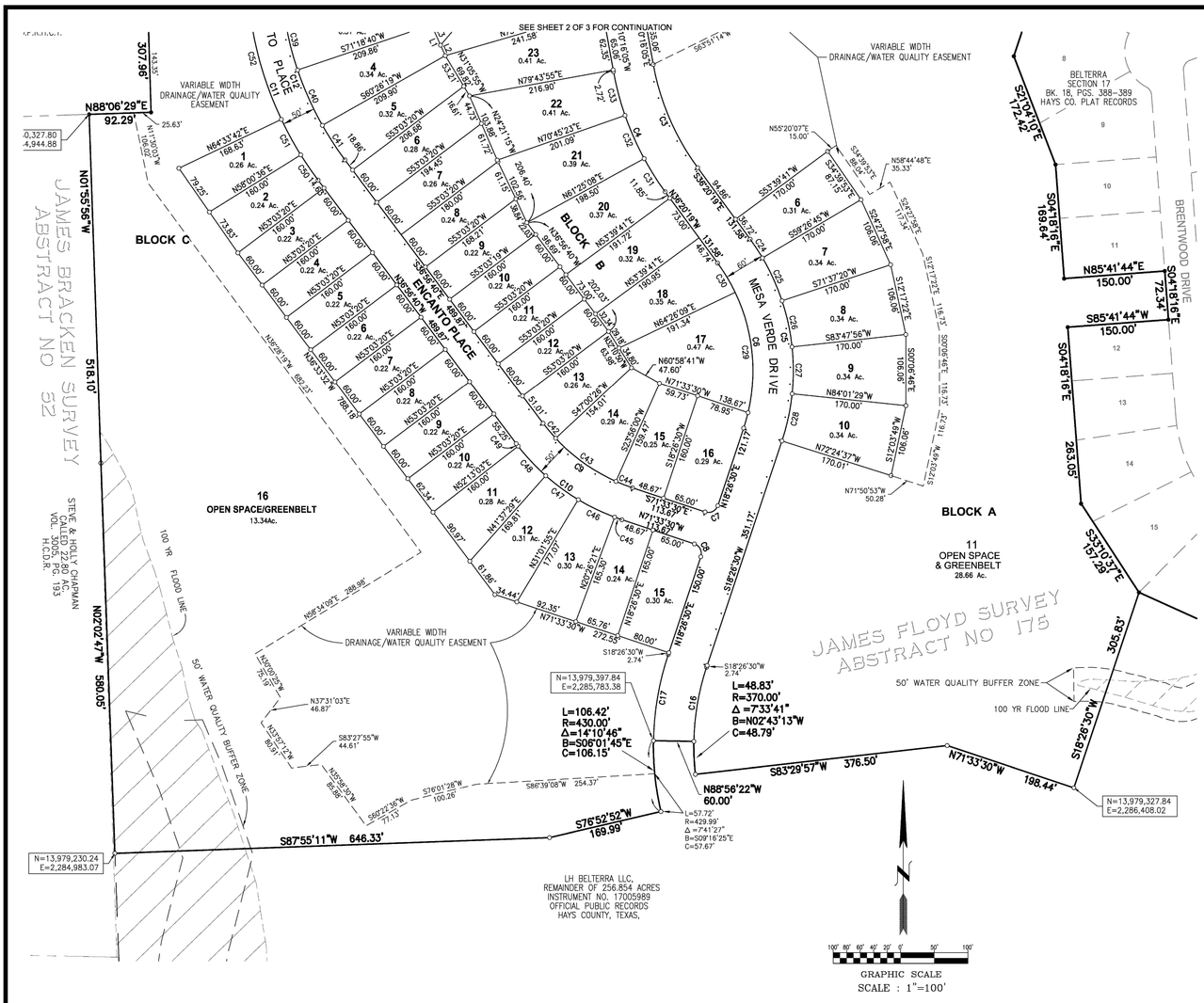
BELTERRA SECTION 20-1

SHEET 2 OF 3



LEGEND:

●	IRON ROD WITH CAP FOUND
○	IRON ROD WITH CAP SET
✱	COTTON SPINDLE SET
▲	MAG NAIL SET
⊠	CONCRETE MONUMENT SET
D.E.	DRAINAGE ESMT.
W.L.E.	WATER LINE ESMT.
W.W.E.	WASTEWATER EASEMENT
·····	SIDEWALK LOCATION
O.P.R.H.C.T.	OFFICIAL PUBLIC RECORDS HAYS COUNTY, TEXAS

BM-CM-1
Iron rod found in concrete southeast of the north corner of Lot 41, Block B, Belterra Phase 4, Section 18.
Elevation = 1111.53' (NGVD 29)

TBM-4
"U" cut in concrete of electric transformer pad, north side of Belterra Blvd., 76'+/- SE of southeast corner of Lot 12, Block B Belterra Phase 4, Section 19B
Elevation = 1141.30' (NGVD 29)

CURVE DATA TABLE

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	481.52'	330.00'	83°36'11"	S52°04'11"E	439.92'
C2	393.97'	270.00'	83°36'11"	S52°04'11"E	359.94'
C3	168.36'	370.00'	26°04'14"	S23°18'12"E	166.91'
C4	195.66'	430.00'	26°04'14"	S23°18'12"E	193.97'
C5	315.51'	330.00'	54°46'49"	S08°56'55"E	303.63'
C6	258.15'	270.00'	54°46'49"	S08°56'55"E	248.43'
C7	23.56'	15.00'	90°00'00"	S63°26'30"W	21.21'
C8	23.56'	15.00'	90°00'00"	N26°33'30"W	21.21'
C9	166.13'	275.00'	34°36'50"	N54°15'05"W	163.62'
C10	196.34'	325.00'	34°36'50"	N54°15'05"W	193.37'
C11	303.05'	525.00'	33°04'24"	N02°24'28"W	298.86'
C12	274.19'	475.00'	33°04'24"	N02°24'28"W	270.40'
C13	23.56'	15.00'	90°00'00"	N41°07'44"E	21.21'
C14	22.34'	15.00'	85°20'19"	N46°32'25"W	20.33'
C15	336.63'	340.00'	56°43'41"	S60°50'44"E	323.05'
C16	112.24'	370.00'	17°22'52"	S09°45'04"W	111.81'
C17	130.44'	430.00'	17°22'52"	N09°45'04"E	129.94'
C18	55.15'	332.82'	9°29'38"	S89°06'00"E	55.08'
C19	70.13'	331.17'	12°08'01"	S78°11'43"E	70.00'
C20	70.13'	330.04'	12°10'30"	S66°01'51"E	70.00'
C21	70.13'	330.00'	12°10'33"	S53°51'17"E	70.00'
C22	70.13'	330.00'	12°10'36"	S41°40'42"E	70.00'
C23	145.84'	330.00'	25°19'19"	S22°55'45"E	144.66'
C24	33.32'	330.00'	5°47'04"	S33°26'47"E	33.30'
C25	70.13'	330.00'	12°10'36"	S24°37'58"E	70.00'
C26	70.13'	330.00'	12°10'36"	S12°27'22"E	70.00'
C27	70.13'	330.00'	12°10'36"	S00°06'46"E	70.00'
C28	71.80'	330.00'	12°27'58"	S12°12'31"W	71.66'
C29	183.51'	270.00'	38°56'33"	N06°05'35"W	180.00'
C30	50.77'	270.00'	10°46'28"	N35°57'05"W	50.70'
C31	58.22'	430.00'	7°45'23"	N32°27'35"W	58.18'
C32	70.08'	429.89'	9°20'23"	N23°54'43"W	70.00'
C33	67.36'	429.86'	8°58'42"	N14°45'23"W	67.29'
C34	26.38'	270.00'	5°35'52"	N13°04'02"W	26.37'
C35	157.21'	270.00'	33°21'41"	N32°49'50"W	155.00'
C36	157.21'	270.01'	33°21'36"	N66°11'10"W	155.00'
C37	51.86'	270.08'	11°00'04"	N88°23'12"W	51.78'
C38	32.71'	475.00'	3°56'44"	S05°50'38"E	32.70'
C39	90.14'	475.00'	10°52'20"	S13°15'10"E	90.00'
C40	90.14'	475.00'	10°52'20"	S24°07'30"E	90.00'
C41	61.21'	475.00'	7°23'00"	S33°15'10"E	61.17'
C42	29.03'	275.00'	6°02'53"	S39°58'07"E	29.01'
C43	110.75'	275.00'	23°04'26"	S54°31'47"E	110.00'
C44	26.35'	275.00'	5°29'31"	S66°48'43"E	26.35'
C45	11.33'	325.00'	1°99'51"	N70°33'35"W	11.33'
C46	60.09'	325.00'	10°35'34"	N64°15'52"W	60.00'
C47	60.09'	325.00'	10°35'34"	N53°40'18"W	60.00'
C48	60.09'	325.00'	10°35'34"	N43°04'44"W	60.00'
C49	4.75'	325.00'	0°50'17"	N37°21'49"W	4.75'
C50	45.40'	525.00'	4°57'18"	N34°28'02"W	45.38'
C51	60.03'	525.00'	6°33'06"	N26°42'51"W	60.00'
C52	197.62'	525.00'	21°34'02"	N14°39'17"W	196.46'
C53	95.66'	340.00'	16°07'15"	N81°08'57"W	95.35'
C54	15.02'	260.00'	3°18'33"	N86°35'41"E	15.01'
C55	8.22'	260.00'	1°48'41"	N87°02'04"E	8.22'

LINE DATA TABLE

LINE	BEARING	DISTANCE
L1	N24°10'46"W	50.23'
L2	N24°10'46"W	17.03'
L3	N24°10'46"W	33.21'

PROJECT:	BELTERRA SECTION 20-1 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	JUNE 2017
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

Texas Engineering Solutions

3815 S. CAPITAL OF TEXAS HWY., STE. 300
AUSTIN, TEXAS 78746
O: 512-904-0505
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TBPE NO. 11206

AUSTIN SPATIAL TECHNOLOGIES, LLC
LAND SURVEYORS - GEOMATIC SPECIALISTS
www.austinspatial.com
Ph: 512-364-0364

BELTERRA SECTION 20-1

SHEET 3 OF 3

STATE OF TEXAS §
COUNTY OF HAYS §

KNOW ALL MEN BY THESE PRESENTS: THAT LH BELTERRA LLC, A DELAWARE LIMITED LIABILITY COMPANY, OWNER OF 21.89 ACRES OF LAND IN THE JAMES FLOYD SURVEY No. 175, IN HAYS COUNTY, TEXAS, BEING A PORTION OF A CALLED 256.854 ACRE TRACT AS CONVEYED TO IT BY VIRTUE OF SPECIAL WARRANTY DEED RECORDED IN INSTRUMENT NO. 17005989 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS, DO HEREBY SUBDIVIDE SAID 21.89 ACRE PORTION OF SAID 256.854 ACRE TRACT OF LAND IN ACCORDANCE WITH THE ATTACHED MAP OR PLAT TO BE KNOWN AS

"BELTERRA SECTION 20-2"

SUBJECT TO ANY EASEMENTS AND/OR RESTRICTIONS HERETOFORE GRANTED, AND DO HEREBY DEDICATE TO THE PUBLIC USE OF THE STREETS AND EASEMENTS SHOWN HEREON. IN ADDITION, LOT 10, BLOCK A, AND LOT 7 BLOCK B ARE HEREBY DEDICATED TO AND MAINTAINED BY HAYS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 2.

WITNESS MY HAND THIS THE _____ DAY OF _____, 20____.

LH BELTERRA LLC, A DELEWARE LIMITED LIABILITY COMPANY

BY:_____

_____
PRINTED NAME AND TITLE

STATE OF TEXAS §
COUNTY OF HAYS §

ON _____, BEFORE ME, PERSONALLY APPEARED _____, WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME IN HIS AUTHORIZED CAPACITY, AND THAT BY HIS SIGNATURE ON THE INSTRUMENT THE PERSON, OR THE ENTITY UPON BEHALF OF WHICH THE PERSON ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF TEXAS THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND AND SEAL

SIGNATURE:_____

MY COMMISSION EXPIRES:_____

IN ORDER TO PROMOTE SAFE USE OF ROADWAYS AND PRESERVE THE CONDITIONS OF PUBLIC ROADWAYS, NO DRIVEWAY CONSTRUCTED ON ANY LOT WITHIN THIS SUBDIVISION SHALL BE PERMITTED ACCESS ONTO A PUBLICLY DEDICATED ROADWAY UNLESS (A) A DRIVEWAY PERMIT HAS BEEN ISSUED BY THE TRANSPORTATION DEPARTMENT OF HAYS COUNTY AND (B) THE DRIVEWAY SATISFIES THE REQUIREMENT FOR DRIVEWAYS SET FORTH IN CHAPTER 721 OF THE HAYS COUNTY DEVELOPMENT REGULATIONS.

IN APPROVING THIS PLAT BY THE COMMISSIONERS COURT OF HAYS COUNTY, TEXAS, IT IS UNDERSTOOD THAT THE BUILDING OF ALL STREETS, ROADS, AND OTHER PUBLIC THOROUGHFARES DELINEATED AND SHOWN ON THIS PLAT , AND ALL BRIDGES AND CULVERTS NECESSARY TO BE CONSTRUCTED OR PLACED IN SUCH STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES, OR IN CONNECTION THEREWITH SHALL BE THE RESPONSIBILITY OF THE OWNER AND / OR THE DEVELOPER OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PRESCRIBED BY THE COMMISSIONERS COURT OF HAYS COUNTY, TEXAS AND THE COMMISSIONERS OF HAYS COUNTY, TEXAS, ASSUMES NO OBLIGATION TO BUILD THE STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES SHOWN ON THIS PLAT OR OF CONSTRUCTING ANY BRIDGES OR CULVERTS IN CONNECTION THEREWITH.

OWNER / DEVELOPER:
LH BELTERRA LLC
400 E. LAS COLINAS BLVD.
IRVING,TX 75039
469-513-5600

SURVEYOR:
AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TEXAS 78739
(512) 573-6730

ENGINEER:
TEXAS ENGINEERING SOLUTIONS
3815 S. CAPITAL OF TEXAS HIGHWAY
SUITE 300
AUSTIN, TEXAS 78704
O: 512-904-0505
F: 512-904-0509
TBPE NO. 11206

FINAL PLAT NOTES:

1. THIS PLAT IS LOCATED ENTIRELY WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS AND ENTIRELY WITHIN THE BOUNDARY OF THE HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2.
2. NO PORTION OF THIS PLAT LIES WITHIN THE BOUNDARIES OF THE EDWARDS AQUIFER RECHARGE ZONE.
3. THIS PLAT LIES WITHIN THE BOUNDARIES OF THE CONTRIBUTING ZONE OF THE EDWARDS AQUIFER.
4. THIS PLAT IS LOCATED WITHIN THE BOUNDARY OF THE DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT.
5. THIS PLAT IS BASED UPON TOPOGRAPHICAL INFORMATION TAKEN FROM AN AERIAL SURVEY BY PROTERRA AERIAL MAPPING, INC. DATED MAY 13, 2004.
6. A PORTION OF THIS PROPERTY IS LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD PLAIN AS DELINEATED ON THE FLOOD INSURANCE RATE MAP NO. 48209C0140 F, AND PANEL No. 48209C0140F EFFECTIVE DATE OF SEPTEMBER 2, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AND IS CONTAINED WITHIN A DRAINAGE EASEMENT.
7. THERE ARE NO AREAS WITHIN THE PROPOSED SUBDIVISION WITH SLOPES GREATER THAN 35%.
8. WATER SERVICE WILL BE PROVIDED TO EACH RESIDENTIAL LOT BY HAYS COUNTY WCID NO. 2. NO INDIVIDUAL WATER WELLS WILL BE ALLOWED.
9. ORGANIZED WASTEWATER SERVICE WILL BE PROVIDED TO EACH RESIDENTIAL LOT BY HAYS COUNTY WCID NO. 2. NO INDIVIDUAL ON-SITE SEWAGE FACILITY WILL BE ALLOWED.
10. ELECTRIC SERVICE WILL BE PROVIDED BY THE PEDERNALES ELECTRIC COOPERATIVE.
11. TELEPHONE SERVICE WILL BE PROVIDED BY ATT.
12. ORGANIZED GAS SERVICE WILL BE PROVIDED BY TEXAS COMMUNITY PROPANE.
13. MINIMUM FRONT SETBACK SHALL BE 25 FEET, UNLESS NOTED OTHERWISE.
14. MINIMUM REAR YARD SETBACK SHALL BE 10 FEET.
15. MINIMUM SIDE AND INTERIOR YARD SETBACKS SHALL BE 5 FEET, UNLESS OTHERWISE NOTED.
16. UTILITY EASEMENTS OF 10 FEET SHALL BE LOCATED ALONG EACH SIDE OF DEDICATED RIGHT-OF-WAY.
17. ALL STREETS SHALL BE DESIGNED IN ACCORDANCE WITH APPLICABLE CITY OF DRIPPING SPRINGS REQUIREMENTS AND APPROVED BY THE HAYS COUNTY TRANSPORTATION DEPARTMENT AND UPON ACCEPTANCE SHALL BE DEDICATED TO THE COUNTY FOR MAINTENANCE.
18. ALL LOTS WILL ACCESS PUBLIC STREETS VIA CONCRETE DRIVEWAYS. STREETS TO BE ACCESSED WILL BE CONSTRUCTED WITH CURB AND GUTTER; THEREFORE NO DRIVEWAY CULVERTS WILL BE NECESSARY.
19. MESA VERDE DRIVE WILL BE A RESIDENTIAL COLLECTOR WITH A 60-FOOT RIGHT-OF-WAY AND A 40 FOOT WIDE ROADWAY.
20. LINEAR FOOTAGE OF MESA VERDE DRIVE: 923 L.F. TOTAL LINEAR FOOTAGE OF LOCAL STREET IMPROVEMENTS: 1,047 L.F.
21. THIS PLAT HAS BEEN PREPARED IN ACCORDANCE WITH THE CITY OF DRIPPING SPRINGS REQUIREMENTS AS APPLICABLE TO THIS DEVELOPMENT.
22. AREA WITHIN NEW ROAD RIGHT-OF-WAY = 1.27 ACRES.
23. DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HAYS COUNTY REQUIREMENTS OR AS APPROVED BY THE HAYS COUNTY TRANSPORTATION DEPARTMENT.
24. WATER QUALITY BUFFER ZONE (BUFFER AREAS) RESTRICTIONS:
    A. LIMIT DISTURBANCE OF BUFFER AREAS AS MUCH AS PRACTICAL DURING CONSTRUCTION.
    B. CONSTRUCTION ALLOWED IN THE BUFFER AREAS INCLUDES UTILITIES, DRAINAGE FACILITIES, WATER QUALITY FACILITIES, FENCES AND LOW IMPACT PARKS.
    C. UTILITY CONSTRUCTION AREAS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AFTER CONSTRUCTION.
    D. LOW IMPACT PARK DEVELOPMENT WITHIN THE BUFFER AREAS SHOULD BE LIMITED TO TRAILS, PICNIC FACILITIES, AND SIMILAR CONSTRUCTION THAT DOES NOT SIGNIFICANTLY ALTER THE EXISTING VEGETATION.
25. THIS PLAT IS SUBJECT TO THE "FOSTER RANCH DEVELOPMENT AGREEMENT", DATED APRIL 19, 2001 AND IS COMPLIANT WITH SAID DEVELOPMENT AGREEMENT.
26. OPEN SPACE/GREENBELT LOTS ARE NOT INTENDED FOR RESIDENTIAL DEVELOPMENT.

STATE OF TEXAS §
COUNTY OF TRAVIS §

KNOW ALL MEN BY THESE PRESENTS, THAT I, THE UNDERSIGNED, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS PLAT COMPLIES WITH THE SURVEY RELATED REQUIREMENTS OF THE HAYS COUNTY DEVELOPMENT REGULATIONS AND THE CITY OF DRIPPING SPRINGS AND FURTHER CERTIFY THAT THIS PLAT WAS TRUE AND CORRECTLY MADE AND IS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND AND THAT THE CORNER MONUMENTS WERE PROPERLY PLACED UNDER MY SUPERVISION.

_____
PAUL C. SAUVE, JR.
REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF TEXAS No. 2518

AUGUST 10, 2017
DATE

STATE OF TEXAS
REGISTERED
PAUL C. SAUVE, JR.
2518
PROFESSIONAL
LAND SURVEYOR

STATE OF TEXAS §
COUNTY OF TRAVIS §

I, STEPHEN R. DELGADO, A LICENSED PROFESSIONAL ENGINEER, DO HEREBY CERTIFY THAT NO PORTION OF THIS PROPERTY IS LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD ZONE AREA, AS DELINEATED ON THE FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL No. 48209C0128F AND PANEL No. 48209C0140F EFFECTIVE DATE OF SEPTEMBER 02, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. ADDITIONALLY, STORM WATER RUNOFF FROM THE 100-YEAR STORM EVENT SHALL BE CONTAINED WITHIN THE DRAINAGE FACILITIES TO BE LOCATED WITHIN THE RIGHTS-OF-WAY AND/OR DRAINAGE EASEMENTS SHOWN ON THE ATTACHED PLAT.

_____ _____
STEPHEN R. DELGADO, PE DATE
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS No. 99342

BELTERRA SECTION 20-2 IS LOCATED ENTIRELY WITHIN THE BOUNDARIES AND SERVICE AREA OF HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2. WATER AND WASTEWATER SERVICE, AS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, WILL BE PROVIDED TO ALL LOTS REQUIRING SERVICE THROUGH THE DISTRICT'S PUBLIC WATER AND WASTEWATER SYSTEMS.

_____ _____
THOMAS PATRICK PHILLIPS, PRESIDENT DATE
HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2

SEWAGE DISPOSAL / INDIVIDUAL WATER SUPPLY CERTIFICATION, TO-WIT:

NO STRUCTURE IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO AN INDIVIDUAL WATER SUPPLY OR A STATE - APPROVED COMMUNITY WATER SYSTEM. DUE TO DECLINING WATER SUPPLIES AND DIMINISHING WATER QUALITY, PROSPECTIVE PROPERTY OWNERS ARE CAUTIONED BY HAYS COUNTY TO QUESTION THE SELLER CONCERNING GROUND WATER AVAILABILITY. RAIN WATER COLLECTION IS ENCOURAGED AND IN SOME AREAS MAY OFFER THE BEST RENEWABLE WATER RESOURCE.

NO STRUCTURE IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO A PUBLIC SEWER SYSTEM.

NO CONSTRUCTION OR OTHER DEVELOPMENT WITHIN THIS SUBDIVISION MAY BEGIN UNTIL ALL HAYS COUNTY DEVELOPMENT PERMIT REQUIREMENTS HAVE BEEN MET.

_____ _____
JAMES C. GARZA, DIRECTOR DATE
HAYS COUNTY DEVELOPMENT & COMMUNITY SERVICES

_____ _____
TOM POPE, CFM DATE
HAYS COUNTY FLOODPLAIN ADMINISTRATOR

STATE OF TEXAS :
COUNTY OF HAYS :

I, THE UNDERSIGNED, DIRECTOR OF THE HAYS COUNTY DEVELOPMENT AND COMMUNITY SERVICES DEPARTMENT, HEREBY CERTIFY THAT THIS SUBDIVISION PLAT CONFORMS TO ALL HAYS COUNTY REQUIREMENTS AS STATED IN THE INTERLOCAL COOPERATION AGREEMENT BETWEEN HAYS COUNTY AND THE CITY OF DRIPPING SPRINGS FOR SUBDIVISION REGULATION WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS.

_____
JAMES C. GARZA, DIRECTOR
HAYS COUNTY DEVELOPMENT & COMMUNITY SERVICES

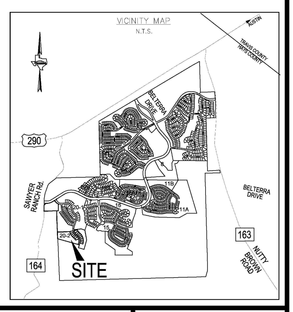
STATE OF TEXAS :
COUNTY OF HAYS :

I, LIZ Q. GONZALEZ, COUNTY CLERK OF HAYS COUNTY, TEXAS DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IN WRITING WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE _____ DAY OF _____, 20___ A.D. AT _____ O'CLOCK ___ M. IN THE PLAT RECORDS OF HAYS COUNTY, TEXAS IN DOCUMENT NO. _____, WITNESS MY HAND AND SEAL OF OFFICE, THIS THE _____ DAY OF _____, 20___ A.D.

_____
LIZ Q. GONZALEZ
COUNTY CLERK
HAYS COUNTY, TEXAS

BELTERRA SECTION 20-2 HAS BEEN SUBMITTED AND CONSIDERED BY THE CITY OF DRIPPING SPRINGS AS A FINAL PLAT FOR ADMINISTRATIVE APPROVAL PURSUANT TO ORDINANCE 1230.09, AND HAS BEEN FOUND TO COMPLY WITH THE CITY'S CODE OF ORDINANCES, AND IS HEREBY APPROVED ADMINISTRATIVELY.

_____ _____
MICHELLE FISCHER, CITY ADMINISTRATOR DATE
CITY OF DRIPPING SPRINGS



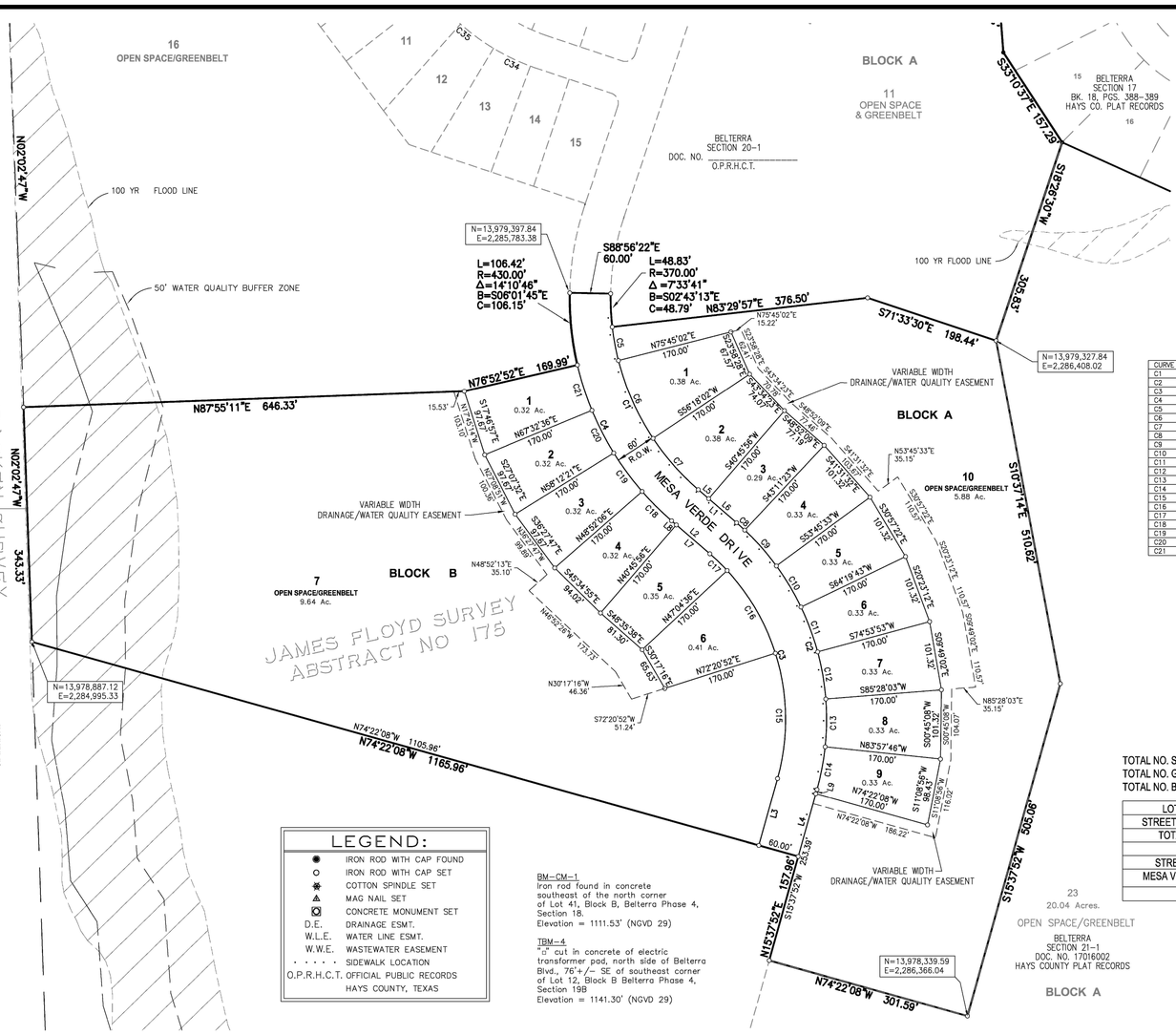
PROJECT:	BELTERRA SECTION 20-2 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	JUNE 2017
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

Texas Engineering Solutions
3815 S. CAPITAL OF TEXAS HWY, STE. 300
AUSTIN, TEXAS 78746
O: 512-904-0505
F: 512-904-0509
TBPE NO. 11206

AUSTIN SPATIAL TECHNOLOGIES, LLC
LAND SURVEYORS - GEOMATIC SPECIALISTS
www.austinspatial.com PH: 512-284-0284

BELTERRA SECTION 20-2

SHEET 1 OF 2



BM-CM-1
Iron rod found in concrete southeast of the north corner of Lot 41, Block B, Belterra Phase 4, Section 18.
Elevation = 1111.53' (NGVD 29)

TBM-4
"+" cut in concrete of electric transformer pad, north side of Belterra Blvd., 76'+/- SE of southeast corner of Lot 12, Block B Belterra Phase 4, Section 19B
Elevation = 1141.30' (NGVD 29)

LEGEND:

●	IRON ROD WITH CAP FOUND
○	IRON ROD WITH CAP SET
✱	COTTON SPINDLE SET
▲	MAG NAIL SET
▣	CONCRETE MONUMENT SET
D.E.	DRAINAGE ESMT.
W.L.E.	WATER LINE ESMT.
W.W.E.	WASTEWATER EASEMENT
· · · · ·	SIDEWALK LOCATION
O.P.R.H.C.T.	OFFICIAL PUBLIC RECORDS HAYS COUNTY, TEXAS

CURVE DATA TABLE

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	324.79'	370.00'	50°17'42"	S41°45'13"E	314.46'
C2	430.21'	380.00'	64°31'57"	S16°48'06"E	407.60'
C3	362.28'	320.00'	64°51'57"	N16°48'06"W	343.24'
C4	347.04'	430.00'	46°14'51"	N26°06'49"W	337.70'
C5	50.04'	370.00'	7°44'55"	S10°22'31"E	50.00'
C6	125.60'	370.00'	19°27'00"	S23°38'28"E	125.00'
C7	100.32'	370.00'	15°32'07"	S41°28'01"E	100.01'
C8	16.08'	380.00'	2°25'28"	N48°01'21"W	16.08'
C9	70.10'	380.00'	10°34'10"	S41°31'32"E	70.00'
C10	70.10'	380.00'	10°34'10"	S30°57'22"E	70.00'
C11	70.10'	380.00'	10°34'10"	S20°23'12"E	70.00'
C12	70.10'	380.00'	10°34'10"	S09°49'02"E	70.00'
C13	70.10'	380.00'	10°34'10"	S00°45'08"W	70.00'
C14	63.63'	380.00'	9°35'39"	S10°50'03"W	63.56'
C15	185.89'	320.00'	33°17'00"	N01°00'38"W	183.29'
C16	141.14'	320.00'	25°16'18"	N30°17'18"W	140.00'
C17	35.25'	320.00'	6°18'40"	N46°04'44"W	35.23'
C18	60.81'	430.00'	8°06'10"	N45°10'59"W	60.76'
C19	70.08'	430.00'	9°20'15"	N36°27'47"W	70.00'
C20	70.08'	430.00'	9°20'15"	N27°07'32"W	70.00'
C21	70.08'	428.29'	9°22'30"	N17°46'50"W	70.00'

LINE DATA TABLE

LINE	BEARING	DISTANCE
L1	S49°14'04"E	74.06'
L2	N49°14'04"W	74.06'
L3	S15°37'52"W	101.89'
L4	S15°37'52"W	101.89'
L5	S49°14'04"E	20.14'
L6	S49°14'04"E	53.93'
L7	N49°14'04"W	64.80'
L8	N49°14'04"W	9.26'
L9	S15°37'52"W	6.46'

TOTAL NO. SINGLE FAMILY LOTS: 15 (5.10 AC.)
TOTAL NO. GREENBELT, & DRAINAGE EASEMENT LOTS: 2 (15.52 AC.)
TOTAL NO. BLOCKS: 2

LOT AREA	20.62 AC.
STREET ROW AREA	1.27 AC.
TOTAL AREA	21.89 AC.

CENTERLINE STREET LINEAR FOOTAGE

STREET NAME	ROW WIDTH	LENGTH	TYPE
MESA VERDE DRIVE	60'	923'	LOCAL
TOTAL LINEAR FEET OF STREET ROW = 923.33			

LOT SIZE	NO.
>10 ACRES	0
5 TO 10 ACRES	2
2 TO 5 ACRES	0
1 TO 2 ACRES	0
< 1 ACRE	15

PROJECT:	BELTERRA SECTION 20-2 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	JUNE 2017
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

Texas Engineering Solutions
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BELTERRA SECTION 20-2

SHEET 2 OF 2

EROSION AND SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY EROSION CONTROL MEASURES PRIOR TO ANY STREET, STORM SEWER OR OTHER UTILITY EXCAVATION. THE PLACEMENT OF SUCH CONTROLS SHALL BE IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PLANS. ACTUAL LOCATIONS MAY VARY SLIGHTLY FROM THE PLANS BUT WILL BE VERIFIED BY THE PROJECT ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INSPECT THE CONTROLS WEEKLY AND AFTER EVERY SIGNIFICANT RAINFALL TO INSURE THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY SEDIMENT THAT HAS ACCUMULATED AFTER A SIGNIFICANT RAINFALL SHALL BE REMOVED AND PLACED IN A DESIGNATED SPOIL DISPOSAL SITE. THE OWNER SHALL CONDUCT ONGOING INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROL METHODOLOGIES AND DIRECT THE PERSON OR FIRM RESPONSIBLE FOR THE MAINTENANCE TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OR EACH METHODOLOGY.

2. ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW (FOR SPECIFICS REFERENCE CITY OF AUSTIN STANDARD SPECIFICATIONS - SERIES 600, ENVIRONMENTAL ENHANCEMENT). A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DISTURBED AREAS (EXCEPT ROCK) AND BETWEEN THE SHOULDER AND THE R.O.W.

THE CONTRACTOR SHALL HYDROMULCH OR SOD ALL CUTS AND FILL UPON COMPLETION OF CONSTRUCTION, EXCEPT WHERE CUTS ARE MADE IN SOLID ROCK. THE SEEDING OR EROSION CONTROL SHALL BE APPLIED AT THE SPECIFIC RATE OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS:

FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH A COMBINATION OF 1 POUND PER 1000 SQUARE FEET OF UNHULLED BERMUDA AND 1 POUND PER 1000 SQUARE OF WINTER RYE WITH A PURITY OF 95% GERMINATION.

FROM MARCH 1 TO SEPTEMBER 15, SEEDING SHALL BE WITH A HULLED BERMUDA GRASS (CYNODENYN DACTOLYN) AT A RATE OF 1 POUND PER 1000 SQUARE FEET WITH A PURITY OF 95% WITH 85% GERMINATION.

FERTILIZER SHALL HAVE AN ANALYSIS OF 15-15-15 AND SHALL BE APPLIED TO A RATE OF 1 LB. PER 1000 SQUARE FEET. MULCH TYPE TO BE STRAW OR HAY APPLIED AT A RATE OF 500 POUNDS PER ACRE. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS REACHED A HEIGHT OF AT LEAST 1-1/2" (95%) COVERAGE AND NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST.

3. THE SEEDED OR PLANTED AREA IS TO BE IRRIGATED OR SPRINKLED IN A MANNER WHICH WILL NOT ERODE THE TOPSOIL BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN DAY INTERVALS FOR THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF AT LEAST 1/2 INCH SHALL POSTPONE THE WATERING OPERATIONS FOR ONE WEEK.

4. WHEN REQUIRED, NATIVE GRASS SEEDING SHALL COMPLY WITH SECTION 604.6 (NATIVE GRASS SEEDING) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS - SERIES 600, ENVIRONMENTAL ENHANCEMENT.

5. INDIVIDUAL HOMEBUILDER IS RESPONSIBLE FOR ESC DURING HOME CONSTRUCTION.

PAVEMENT DESIGN NOTES:

STREETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MLALABS, INC. GEOTECHNICAL ENGINEER'S INVESTIGATIONS & RECOMMENDATIONS, WHICH ARE:

STREET CLASSIFICATION	SUBGRADE MATERIAL (IN)	HMAC (IN)	CRUSHED LIMESTONE BASE (IN)	LOW PLASTICITY SUB-BASE (IN)	LIME STABILIZED SUBGRADE (IN)	GEOGRID OR MOISTURE BARRIER
LOCAL STREETS						
> 2 FEET OF EXPANSIVE SUBGRADE PI>25		2	8	18	-	X*
> 2 FEET OF EXPANSIVE SUBGRADE PI>25		2	8	-	8	X*
< 2 FEET OF EXPANSIVE SUBGRADE PI>25		2	8	-	-	-
RESIDENTIAL COLLECTOR						
> 2 FEET OF EXPANSIVE SUBGRADE PI>25		2	10	18	-	X*
> 2 FEET OF EXPANSIVE SUBGRADE PI>25		2	10	-	8	X*
< 2 FEET OF EXPANSIVE SUBGRADE PI>25		2	10	-	-	-

NOTE: MESA VERDE DRIVE SHALL BE CONSIDERED A RESIDENTIAL COLLECTOR STREET. ENCANTO PLACE SHALL BE CONSIDERED A LOCAL STREET

1. *WHERE MORE THAN 2 FEET OF EXPANSIVE SUBGRADE EXISTS AFTER ROUGH CUT OF THE STREETS, ONE OF THE TWO FOLLOWING OPTIONS MUST BE EMPLOYED. THIS IS A REQUIREMENT OF THE HAYS COUNTY STANDARD SPECIFICATIONS.
OPTION 1. A SINGLE LAYER OF BIAXIAL GEOGRID MEETING TXDOT STANDARD DMS 6240 TYPE II SHOULD BE PLACED BELOW THE CRUSHED LIMESTONE BASE LAYER.
OPTION 2: A MOISTURE BARRIER SHOULD EXTEND HORIZONTALLY FROM THE BACK OF THE CURB A MINIMUM OF 10 FEET.

2. ANY EXPANSIVE FILL (PI > 25) PLACED IN THE SUBGRADE SHALL BE CONSIDERED EXPANSIVE SUBGRADE.

3. THE PRIMARY PAVEMENT DESIGN OPTION FOR AREAS WITH MORE THAN 2 FEET OF EXPANSIVE CLAY SHALL BE THE 50% INCREASE IN CRUSHED LIMESTONE BASE OPTION. LOW PLASTICITY SUB-BASE OPTION SHALL BE CONSIDERED AN ALTERNATE DESIGN.

4. DELINEATION BETWEEN THESE DIFFERENT PAVEMENT THICKNESS SECTIONS SHOULD BE COMPLETED IN THE FIELD BY OBSERVATION OF OPEN UTILITY TRENCHES AND THE PAVEMENT SUBGRADE BY THE GEOTECHNICAL ENGINEER OR HIS DESIGNATE. GIVEN THE KNOWN VARIABILITY OF SURFACE SOILS AT THIS SITE, THE GEOTECHNICAL ENGINEER MUST VERIFY THE SUBGRADE PRIOR TO INSTALLATION OF THE PAVEMENT SYSTEM CAN PROCEED. MULTIPLE SITE VISITS MAY BE REQUIRED DEPENDING UPON THE CONSTRUCTION SCHEDULE. FINALIZED DISTINCTION BETWEEN PAVEMENT THICKNESS SECTION OPTIONS SHALL BE PROVIDED AS ADDENDUM TO THIS REPORT AFTER SUBGRADES ARE EXPOSED AND SECTIONS ARE COMPLETED. PLEASE CONTACT THE GEOTECHNICAL ENGINEER WHEN THE UTILITY TRENCHES ARE OPEN.

5. THE CITY OF AUSTIN RECOMMENDS A 50% INCREASE IN BASE COURSE OR 18 INCHES OF LOW PI SUB-BASE (4<PI<15) TO COMPENSATE FOR THE TENDENCY OF MFPS TO UNDERESTIMATE MINIMUM PAVEMENT SECTIONS WHICH IS ALREADY INCLUDED IN THE TABLE.

6. THE SUBGRADE IMPROVEMENT (BE IT A 50% INCREASE IN BASE COURSE OR LOW PLASTICITY SUB-BASE) SHOULD BE EXTENDED 3 FEET BEYOND THE BACK OF THE CURB LINE.

7. THESE PAVEMENT THICKNESS DESIGNS ARE INTENDED TO TRANSFER THE LOAD FROM THE ANTICIPATED TRAFFIC CONDITIONS.

8. THE RESPONSIBILITY OF ASSIGNING STREET CLASSIFICATION TO THE STREETS IN THIS PROJECT IS LEFT TO THE CIVIL ENGINEER. MESA VERDE DRIVE SHALL BE CLASSIFIED AS A RESIDENTIAL COLLECTOR STREET. ENCANTO PLACE SHALL BE CLASSIFIED AS A LOCAL STREET.

9. IF PAVEMENT DESIGNS OTHER THAN THOSE LISTED ABOVE ARE DESIRED, PLEASE CONTACT MLA LABS, INC.

10. WHERE SUBGRADE FIELD CONDITIONS DIFFER FROM CONDITIONS DESCRIBED IN THE GEOTECHNICAL REPORT, THE GEOTECHNICAL ENGINEER SHALL NOTIFY EXAMINER PRIOR TO PLACEMENT OF BASE MATERIAL. ANY HIGH P.I. SUBGRADE (PI>25) SHALL BE REMOVED AND REPLACED WITH SUBGRADE MATERIAL THAT IS PI<25.

SIDEWALK NOTES:

1. SIDEWALK ASSIGNMENTS MAY VARY IN RIGHT-OF-WAY AS DIRECTED BY OWNER. PAYMENT SHALL BE MADE PER LINEAR FOOTAGE INSTALLED AS ARRANGED BY OWNER. THE BID PRICE SHALL INCLUDE ANY CURVATURE OF SIDEWALKS AS VARIED FROM PLANS AS REQUESTED BY OWNER'S REPRESENTATIVE (SEE STREET DETAIL SHEETS). LAYOUT OF WALK (STAKING OR PAINT) IN FIELD FOR APPROVAL BY OWNER MAY BE BY OTHER LAYOUT PREPARED BY LANDSCAPE ARCHITECT NOT INCLUDED IN THESE PLANS. CONTRACTOR TO COORDINATE WITH OWNER TO OBTAIN APPROVAL OF THE SIDEWALK LAYOUT PRIOR TO CONSTRUCTION.

2. ALL SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF LICENSING AND REGULATION REQUIREMENTS.

3. PASSING SPACES TO BE PROVIDED ON SIDEWALKS AT A DISTANCE NOT TO EXCEED 200'. THE PASSING SPACE SHOULD BE A MINIMUM 5' WIDTH BY 5' LENGTH WITH A 2% CROSS SLOPE.

4. SIDEWALKS MAY BE ADJUSTED TO AVOID TREES WITH APPROVAL OF THE OWNER AND ENGINEER.

FRENCH DRAIN NOTES:

1. FRENCH DRAINS MAY BE REQUIRED TO INTERCEPT GROUND WATER IF GROUND WATER IS ENCOUNTERED DURING CONSTRUCTION. IF GROUND WATER IS ENCOUNTERED PLEASE CONTACT THE GEOTECHNICAL AND CIVIL ENGINEERS.

2. CONTRACTOR TO PROVIDE ARMOR PROTECTION FOR FRENCH DRAIN OUTFALLS (i.e.CONCRETE).

3. CONTRACTOR TO PROVIDE AS-BUILT INFORMATION OF LOCATION AND LIMITS OF FRENCH DRAINS INSTALLED, AND LOCATIONS OF DISCHARGE TIE IN TO STORM DRAINS.

SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY EROSION CONTROLS PRIOR TO ANY SITE CLEARING AND GRUBBING.
2. CONSTRUCT (ROUGH CUT) POND TO ACT AS A SEDIMENT TRAP.
3. ROUGH GRADE STREETS. (4.03ac)
4. INSTALL ALL UTILITIES TO BE LOCATED UNDER THE PROPOSED PAVEMENT.
5. BEGIN INSTALLATION OF STORM SEWER LINES. UPON COMPLETION, RESTORE AS MUCH DISTURBED AREA AS POSSIBLE, PARTICULARLY CHANNELS AND LARGE OPEN AREAS.
6. REGRADE STREETS TO SUBGRADE. (4.03ac)
7. INSURE THAT ALL UNDERGROUND UTILITY CROSSINGS ARE COMPLETED. LAY FIRST COURSE BASE MATERIAL ON ALL STREETS.
8. INSTALL CURB, GUTTER, AND CURB RAMPS.
9. LAY FINAL BASE COURSE ON ALL STREETS. (4.03ac)
10. LAY ASPHALT. (3.38ac)
11. COMPLETE ALL UNDERGROUND INSTALLATIONS WITHIN THE RIGHT-OF-WAY.
12. CLEAN SEDIMENT FROM PONDS AND COMPLETE AS PER PLANS.
13. COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION.
14. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.
15. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED.

GENERAL ENGINEERING NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF HAYS COUNTY WCID NO. 2, THE CITY OF DRIPPING SPRINGS, AND HAYS COUNTY. COA STANDARD SPECIFICATIONS SHALL GOVERN CONSTRUCTION WHERE NO OTHER REQUIREMENTS EXIST.

2. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY OF DRIPPING SPRINGS, THE CONSULTING ENGINEER, OWNER, COUNTY INSPECTOR, HAYS COUNTY WCID NO. 2, TCEQ AND ANY OTHER AFFECTED PARTIES. NOTIFY ALL SUCH PARTIES AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

3. THE CONTRACTOR SHALL GIVE THE CITY/COUNTY AND THE ENGINEER 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.

4. ANY EXISTING PAVEMENT, CURBS AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE BEFORE ACCEPTANCE OF THE SUBDIVISION.

5. THE LOCATION OF ANY WATER AND/OR WASTEWATER LINES OR OTHER UTILITIES TO BE CROSSED OR CONNECTED SHALL BE VERIFIED BY THE CONTRACTOR AT THE TIME OF COMMENCEMENT OF CONSTRUCTION.

6. MANHOLE FRAMES, COVERS, AND WATER VALVES SHALL BE SET TO FINISHED PAVEMENT GRADE BY THE UTILITY CONTRACTOR. ALL UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO FINAL PAVING CONSTRUCTION. COMPENSATION FOR UTILITY ADJUSTMENTS SHALL BE PAID FOR IN THE UNIT BID PRICE FOR EACH APPURTENANCE. NO ADDITIONAL PAYMENT WILL BE MADE FOR UTILITY ADJUSTMENTS.

7. CONTRACTOR SHALL VERIFY EXACT DEPTH AND LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, DRIVEWAYS, PAVEMENT, CURB & GUTTER, SIDEWALKS, ETC. SHALL BE REPAIRED BY THE CONTRACTOR, OR THE UTILITY, AT UTILITY'S OPTION, AND SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND BEFORE ACCEPTANCE OF THE SUBDIVISION.

8. ALL WATER MAINS SHALL HAVE A MINIMUM 42 INCHES OF COVER FROM FINISHENATURAL GRADE OR 36 INCHES BELOW ACTUAL SUBGRADE UNLESS OTHERWISE DENOTED ON THE PLANS.

9. CONTACT SHALL BE MADE TO TES, CMA, AND STS 48 HOURS PRIOR TO CONNECTION TO EXISTING WATER AND/OR WASTEWATER LINES.

10. ALL FILL AREAS UNDER PROPOSED ROAD AND OVER ALL UTILITIES, SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY IN ACCORDANCE WITH TEX 113-E METHOD.

11. WATER AND WASTEWATER ALIGNMENTS SHOWN ON THE PLANS SHOULD BE ACHIEVED BY METHODS APPOROVED BY TCEQ AND ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT WHERE SPECIFIC FITTINGS ARE CALLED FOR ON THE PLANS. IF FITTINGS ARE REQUIRED WHERE NOT SHOWN ON THE PLANS, THERE WILL BE NO ADDITIONAL PAY.

12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES, INCLUDING BUT NOT LIMITED TO, GAS LINES, WATERLINES, VALVE BOXES, FIRE HYDRANTS, STRUCTURES, AND OTHER APPURTENANCES THAT LIE WITHIN THE RIGHT-OF-WAY OR EASEMENTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ALL UTILITIES, DRIVEWAYS, PAVEMENT, CURB & GUTTER, SIDEWALKS, FENCES, AND ANY OTHER ITEMS DAMAGED DURING CONSTRUCTION REGARDLESS OF WHETHER ALL ITEMS ARE SHOWN ON THE PLANS AT HIS SOLE EXPENSE. THE LOCATION OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES IS APPROXIMATE. IN ADDITION TO NORMAL PRECAUTIONS WHEN EXCAVATING, TAKE EXTRA CAUTION WHEN EXCAVATING WITHIN 25 FT. OF ANY UTILITIES SHOWN ON THE PLANS.

13. WHENEVER EXISTING UTILITIES, NOT INDICATED ON THE PLANS, PRESENT OBSTRUCTIONS TO GRADE AND ALIGNMENT OF PIPE, IMMEDIATELY NOTIFY TES, CMA, AND STS WHO WILL DETERMINE WHENEVER EXISTING IMPROVEMENTS ARE TO BE RELOCATED, OR GRADE AND ALIGNMENT OF PIPE CHANGED. WHERE NECESSARY TO MOVE SERVICES, POLES, GUY WIRES, PIPELINES, ETC., AS DETERMINED BY THE ENGINEERS, THE CONTRACTOR WILL MAKE ARRANGEMENTS WITH THE OWNER OF THE UTILITY TO BE MOVED AND HAVE IT MOVED. THE COST OF ANY UTILITY RELOCATION WILL BE AT THE CONTRACTOR'S SOLE EXPENSE. OWNER WILL NOT BE LIABLE FOR RELOCATION COSTS OF DAMAGES ON ACCOUNT OF DELAYS DUE TO CHANGES MADE BY OWNERS OF OTHER PRIVATELY OR PUBLICLY OWNED UTILITIES WHICH HINDER PROGRESS OF THE WORK.

14. CONTRACTOR TO INCLUDE ADDITIONAL FLUSHING VALVES AND TEST CONNECTIONS NECESSARY TO PERFORM TEST AND STERILIZATION OPERATION. THERE WILL BE NO ADDITIONAL PAY FOR THESE VALVES AND CONNECTIONS USED FOR TESTING AND STERILIZATION PURPOSES, EXCEPT FOR THOSE SPECIFICALLY SHOWN ON THE PLANS.

15. ALL CONSTRUCTION ACTIVITIES, INCLUDING ACCESS, EGRESS, TRAVEL, STOCKPILING, ETC. ARE TO BE CONFINED TO AREAS IDENTIFIED BY THE OWNER.

16. ALL EXCESS SPOIL MATERIAL SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK EFFORT.

17. REFER TO THE PLANS FOR DETAILS ON "PIPE BEDDING AND BACKFILL", "CONCRETE ENCASEMENT", "CONCRETE THRUST BLOCKING", AND "HORIZONTAL AND VERTICAL BENDS", "FIRE HYDRANT ASSEMBLY", AND OTHER DETAILS.

18. TREE DAMAGES AND CLEARING OUTSIDE THE RIGHT-OF-WAY OR EASEMENTS ARE EXPRESSLY PROHIBITED.

19. PIPE, FITTINGS AND JOINTS: WATER - PVC DR 14, C-900, WITH BOLTLESS GASKETED JOINTS AND C.I., M.J. OR FLANGE FITTINGS UNLESS OTHERWISE SHOWN ON THE PLANS, GRAVITY SEWER - PVC SDR-26 WITH BOLTLESS GASKETED JOINTS, UNLESS OTHERWISE SHOWN ON THE PLANS. FIRE HYDRANT LEAD - DUCTILE IRON, CLASS 50, MECHANICAL JOINTS AND C.I. (D.I. ENDS) FITTINGS, UNLESS OTHERWISE SHOWN ON THE PLANS.

20. ALL GATE VALVES SHALL HAVE RESILIENT VALVE SEATS.

21. THE EXACT LOCATION OF GATE VALVES SHALL BE AT P.C. OF THE CURB AT INTERSECTIONS OR 4 FT. FROM FIRE HYDRANT IF THE SAME LOCATION.

22. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM OF 8 MIL POLYETHYLENE WRAP.

23. AT ALL LOCATIONS WHERE A WATERLINE CROSSES A WASTEWATER LINE, THE CONSTRUCTION SHALL STRICTLY COMPLY WITH ALL APPLICABLE RULES AND REGULATIONS OF THE TCEQ.

24. THE CONTRACTOR SHALL FURNISH THE ENGINEER AND OWNER ONE SET OF "AS-BUILT" PLANS REFLECTING ALL CHANGES MADE IN THE FIELD.

25. THE ENGINEER SHALL BE GIVEN 48 HOURS NOTICE PRIOR TO ANY TESTING PHASE (DENSITY, PRESSURE, LEAKAGE, ETC.).

26. THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL NECESSARY TO PERFORM THE CONSTRUCTION IN A SAFE MANNER TO PROTECT THE PUBLIC SAFETY. NO SEPARATE PAY.

27. THE COST OF ALL FITTINGS SHALL BE INCLUDED IN THE PER FOOT UNIT COST OF PIPE.

28. THE CONTRACTOR SHALL PROVIDE PLUGS AT ALL PIPE STUB-OUTS. NO SEPARATE PAY.

29. THE CONTRACTOR SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR IS RESPONSIBLE FOR ASSURING THAT ALL PERMITS NECESSARY TO LEGALLY PERFORM THE WORK HAVE BEEN OBTAINED PRIOR TO COMMENCING CONSTRUCTION. REQUIRED PERMITS THAT CAN BE ISSUED TO THE CONTRACTOR ONLY WILL BE OBTAINED AT THE CONTRACTOR'S EXPENSE.

30. IF BLASTING IS PLANNED BY THE CONTRACTOR, A BLASTING PERMIT MUST BE SECURED PRIOR TO COMMENCEMENT OF ANY BLASTING.

31. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH HAYS COUNTY REQUIREMENTS AND UNIFORM MANUAL OF TRAFFIC CONTROL DEVICES, AND SHALL MATCH THE APPROVED BELTERRA SIGNAGE REQUIREMENTS. OWNER REPRESENTATIVE TO VERIFY SIGNAGE BASED ON PROVIDED DETAIL BY OWNER.

32. LOT PINS REMOVED, COVERED, OR MOVED DURING CONSTRUCTION SHALL BE RELOCATED AT THE CONTRACTOR'S SOLE EXPENSE, BY A REGISTERED PROFESSIONAL LAND SURVEYOR.

33. THE CITY OF DRIPPING SPRINGS OR ANY OTHER AGENCY LOGO SHALL NOT APPEAR ON ANY MANHOLE LIDS, VALVE BOX COVERS OR ANY OTHER RELATED APPURTENANCE. ALL ITEMS MENTIONED SHALL BE APPROVED AS A SUBMITTAL.

34. NO SAND BEDDING OR BACKFILL WILL BE ALLOWED FOR WATER, WASTEWATER AND STORM SEWER LINES.

35. FILL PLACED ON LOTS SHALL BE DONE IN ACCORDANCE WITH FHA 79G STANDARDS.

36. CONTRACTOR TO VERIFY ANY AND ALL PERMITS TO BURN BRUSH PILES, COORDINATE WITH OWNER.

37. THE CONTRACTOR SHALL POST A NOTICE NEAR THE MAIN ENTRANCE OF THE CONSTRUCTION SITE WITH THE FOLLOWING INFORMATION:

-TPDES PERMIT NUMBER OR A COPY OF THE (NOI) IF THE PERMIT NUMBER HAS NOT YET BEEN ASSIGNED
-THE NAME AND TELEPHONE NUMBER OF A LOCAL CONTACT PERSON
-A BRIEF DESCRIPTION OF THE PROJECT
-THE LOCATION OF THE SWPPP

HAYS COUNTY CONSTRUCTION NOTES:

1. SEVENTY–TWO (72) HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION, THE DEVELOPER SHALL ARRANGE A PRE–CONSTRUCTION CONFERENCE WITH ALL PERTINENT PARTIES.

2. ALL ROADWAY AND DRAINAGE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HAYS COUNTY SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS FROM HAYS COUNTY ROAD AND BRIDGE DEPARTMENT PRIOR TO BEGINNING ANY ON–SITE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING THE NECESSARY INSPECTIONS FROM THE HAYS COUNTY ROAD AND BRIDGE DEPARTMENT. ALL REPAIRS TO IMPROVEMENTS CAUSED BY CONTRACTOR'S FAILURE TO INSTALL IMPROVEMENTS IN ACCORDANCE WITH HAYS COUNTY SPECIFICATIONS AND THESE CONSTRUCTION PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. HAYS COUNTY ROAD AND BRIDGE DEPARTMENT'S ACCEPTANCE OF THE IMPROVEMENTS ARE CONTINGENT ON REPAIRS BEING MADE TO HAYS COUNTY'S SATISFACTION. DELAYS CAUSED BY REPAIRS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

3. CONTRACTOR SHALL ENSURE THAT VEHICLES LEAVING THE CONSTRUCTION SITE ONTO PUBLICLY MAINTAINED ROADWAYS ARE CLEAR OF MUD AND DEBRIS.

4. NO EXPLOSIVES SHALL BE USED FOR THIS PROJECT WITHOUT TCEQ APPROVAL.

5. ALL HOLES, TRENCHES AND OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY BARRICADES, FENCING, LIGHTS AND/OR OTHER PROTECTIVE DEVICES AT ALL TIMES.

6. CONTRACTOR SHALL COMPLY WITH CONSTRUCTION SEQUENCING WHICH MAY BE SPECIFIED SOMEWHERE IN THE CONSTRUCTION PLANS.

7. PERMIT IS REQUIRED FOR CONSTRUCTION IN 'RIGHT OF WAY' :ORDINANCE 7.10. NO DRIVEWAY, UTILITY CONSTRUCTION, MAILBOXES, LANDSCAPING OR ANY OTHER ENCROACHMENT INTO RIGHT–OF–WAY OR EASEMENT SHALL BE ALLOWED WITHOUT FIRST OBTAINING A PERMIT FROM THE HAYS COUNTY ROAD AND BRIDGE DEPARTMENT.

8. PRIOR TO THE INSTALLATION OF ANY ROAD BUILDING MATERIAL THE SUBGRADE SHALL BE INSPECTED BY HAYS COUNTY. PRIOR TO PAVING, BASE MATERIAL SHALL BE INSPECTED BY HAYS COUNTY. THE OWNER IS RESPONSIBLE FOR NOTIFYING THE HAYS COUNTY ROAD DIRECTOR FORTY–EIGHT (48) HOURS PRIOR TO THE TIME WHEN THE INSPECTION IS NEEDED :ORDINANCE 1.05; 2.06.

9. AT THE TIME A FINAL INSPECTION AND RELEASE OF PERFORMANCE SECURITY IS REQUESTED; THE DESIGN ENGINEER SHALL PROVIDE A COMPLETE SET OF "AS–BUILT" RECORD DRAWINGS IN PDF FORMAT (300DPI) ON A VIRUS FREE DISK AND SHALL CERTIFY THAT ALL ROAD AND DRAINAGE CONSTRUCTION HAS BEEN COMPLETED IN SUBSTANTIAL ACCORDANCE WITH PREVIOUSLY APPROVED PLANS AND SPECIFICATIONS, EXCEPT AS NOTED.
NO PERFORMANCE SECURITY WILL BE RELEASED WITHOUT these EXHIBITS.

FIRE HYDRANT REQUIREMENTS:

1. A 5" "STORZ" CONNECTOR MUST BE AFFIXED TO THE STEAMER OULET OF THE HYDRANT.
2. THE "STORZ" CONNECTOR MUST BE EQUIPPED WITH A BLIND CAP.
3. THE 2.5" OUTLETS MUST BE NATIONAL HOSE THREAD.
4. EACH HYDRANT MUST BE IDENTIFIED BY THE USE OF A DOUBLE-SIDED BLUE REFLECTOR SET IN LINE WITH THE HYDRANT AND AFFIXED TO THE ROADWAY. IF THE HYDRANT IS INSTALLED AT AN INTERSECTION, A REFLECTOR MUST BE INSTALLED ON BOTH INTERSECTING ROADWAYS.

TRENCH SAFETY

1. IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U.S. OPERATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ALL TRENCHES OVER 5 FEET IN DEPTH IN EITHER HARD AND COMPACT OR SOFT AND UNSTABLE SOIL SHALL BE SLOPED, SHORED, SHEETED, BRACED OR OTHERWISE SUPPORTED. FURTHERMORE, ALL TRENCHES LESS THAN 5 FEET IN DEPTH SHALL ALSO BE EFFECTIVELY PROTECTED WHEN HAZARDOUS GROUND MOVEMENT MAY BE EXPECTED.

2. IN ACCORDANCE WITH THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, WHEN EMPLOYEES ARE REQUIRED TO BE IN TRENCHES 4-FEET DEEP OR MORE, ADEQUATE MEANS OF EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.

3. IF TRENCH SAFETY SYSTEM DETAILS WERE NOT PROVIDED IN THE PLANS BECAUSE TRENCHES WERE ANTICIPATED TO BE LESS THAN 5 FEET IN DEPTH AND DURING CONSTRUCTION IT IS FOUND THAT TRENCHES ARE IN FACT 5 FEET OR MORE IN DEPTH OR TRENCHES LESS THAN 5 FEET IN DEPTH ARE IN AN AREA JUDGED TO BE UNSTABLE, CONSTRUCTION MUST CEASE IMMEDIATELY. ALL CONSTRUCTION SHALL CEASE, THE TRENCHED AREA SHALL BE BARRICADED AND THE ENGINEER NOTIFIED IMMEDIATELY. CONSTRUCTION SHALL NOT RESUME UNTIL APPROPRIATE TRENCH SAFETY SYSTEM DETAILS, AS DESIGNED BY A PROFESSIONAL ENGINEER, ARE SUBMITTED TO AND ACCEPTED BY THE MUNICIPALITY.

4. FOR SLOPES OR TRENCHES MORE THAN FIVE (5) FEET IN DEPTH, ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). COPIES OF THE OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 611 E. 6TH STREET, AUSTIN, TEXAS.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY CONTRIBUTING ZONE PLAN GENERAL CONSTRUCTION NOTES:

1. WRITTEN CONSTRUCTION NOTIFICATION SHOULD BE PROVIDED TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION SHOULD INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR WITH THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

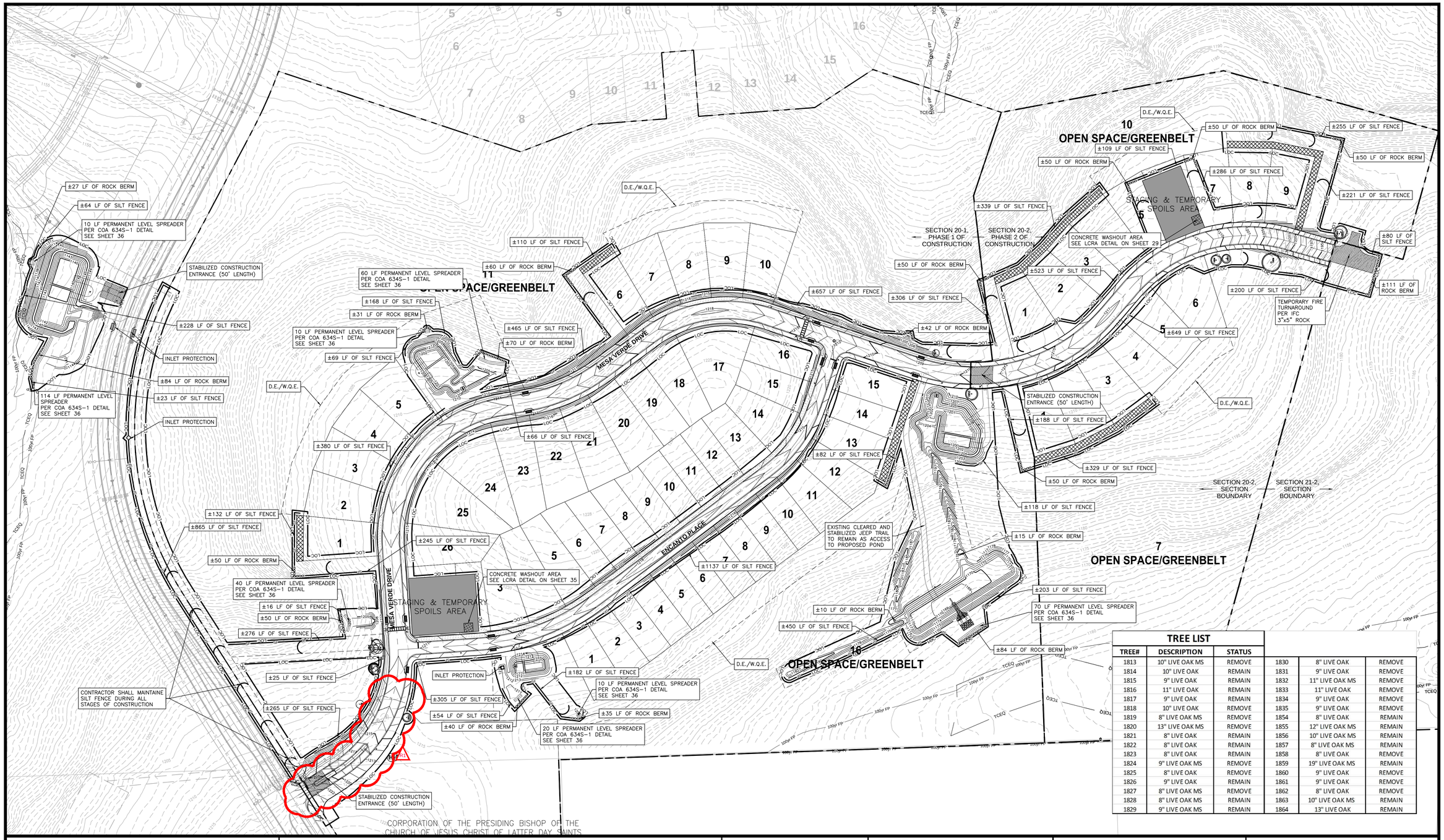
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.

3. NO TEMPORARY ABOVE GROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM MAY BE INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL.

4. PRIOR TO COMMENCING CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE SWPPP SECTION OF THE EDWARDS AQUIFER CONTRIBUTING ZONE PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

5. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).

6. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED



TREE LIST					
TREE#	DESCRIPTION	STATUS			
1813	10" LIVE OAK MS	REMOVE	1830	8" LIVE OAK	REMOVE
1814	10" LIVE OAK	REMAIN	1831	9" LIVE OAK	REMOVE
1815	9" LIVE OAK	REMAIN	1832	11" LIVE OAK MS	REMOVE
1816	11" LIVE OAK	REMAIN	1833	11" LIVE OAK	REMOVE
1817	9" LIVE OAK	REMAIN	1834	9" LIVE OAK	REMOVE
1818	10" LIVE OAK	REMOVE	1835	9" LIVE OAK	REMOVE
1819	8" LIVE OAK MS	REMOVE	1854	8" LIVE OAK	REMAIN
1820	13" LIVE OAK MS	REMOVE	1855	12" LIVE OAK MS	REMAIN
1821	8" LIVE OAK	REMAIN	1856	10" LIVE OAK MS	REMAIN
1822	8" LIVE OAK	REMAIN	1857	8" LIVE OAK MS	REMAIN
1823	8" LIVE OAK	REMAIN	1858	8" LIVE OAK	REMOVE
1824	9" LIVE OAK MS	REMOVE	1859	19" LIVE OAK MS	REMAIN
1825	8" LIVE OAK	REMOVE	1860	9" LIVE OAK	REMOVE
1826	9" LIVE OAK	REMAIN	1861	9" LIVE OAK	REMOVE
1827	8" LIVE OAK MS	REMOVE	1862	8" LIVE OAK	REMOVE
1828	8" LIVE OAK MS	REMAIN	1863	10" LIVE OAK MS	REMAIN
1829	9" LIVE OAK MS	REMAIN	1864	13" LIVE OAK	REMAIN

NOTES

1. LIMITS OF CONSTRUCTION: 20.21 ACRES
2. THE CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL, SECTION 1.4.5.D.
3. ALL AREA INLETS SHALL HAVE INLET PROTECTION IN PLACE UNTIL THE COMPLETION OF GRADING AND REVEGETATION.
4. THE HAYS COUNTY AND CODS INSPECTORS HAVE THE AUTHORITY TO MODIFY EROSION/SEDIMENTATION CONTROLS AS REQUIRED TO ENSURE THE CONTROLS ARE FUNCTIONING PROPERLY.
5. ANY DIRT, MUD, ROCKS OR OTHER DEBRIS CARRIED ONTO EXISTING ROADS SHALL BE REMOVED IMMEDIATELY AND THE ROAD RESTORED TO A DRIVABLE CONDITION, FREE FROM OBSTRUCTIONS.
6. WHERE STREET IMPROVEMENTS END ON A GRADE THAT ALLOWS OFFSITE SEDIMENT TO WASH ONTO PAVEMENT, THE CONTRACTOR SHALL INSTALL ROCK BERMS AT THE EDGE OF PAVEMENT, ROCK BERMS SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL ADJACENT PHASE IMPROVEMENTS BEGIN.
7. AT THE COMPLETION OF STREET AND UTILITY IMPROVEMENTS, THE CONTRACTOR SHALL REVEGETATE THE AREAS DISTURBED BY CONSTRUCTION IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE GENERAL NOTES SHEET.
8. IN AREAS WHERE SILT FENCE IS TO BE INSTALLED CROSSING CONTOURS, J-HOOKS SHALL BE ADDED TO THE SILT FENCE EVERY 100'.
9. OFFSITE DISPOSAL OF SPOIL MATERIAL MUST BE CLEARED BY COUNTY INSPECTOR PRIOR TO THE REMOVAL FROM THE JOBSITE.
10. DIRT TRACKED INTO THE ROADWAY OUTSIDE THE LOC MUST BE IMMEDIATELY REMOVED UPON DISCOVERY.
11. CONTRACTOR SHALL ATTEMPT TO REVEGETATE MAJOR AND CRITICAL PORTIONS OF THE PROJECT IN DISCREET PHASES AND AS EARLY AS POSSIBLE.
12. FOR THE STABILIZATION OF ALL THE SLOPES 3:1 OR GREATER, SUITABLE ESC MATTING (TYPE II) WILL BE UTILIZED IN CONJUNCTION WITH REVEGETATIVE EFFORTS ONSITE. (TYPE II) FOR CHANNELS.
13. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR VEGETATION MATTING.
14. ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN-COMPLIANCE WITH CITY OF AUSTIN RULES AND REGULATIONS.
15. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.5 (A), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
16. THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY.
17. FOR OFF-SITE UTILITY LINES- PROVIDE PERPENDICULAR EROSION CONTROLS EVERY 30' AS YOU FINISH LINE.

LEGEND

- 755 — PROPOSED CONTOURS
- 750 — EXISTING CONTOURS
- EX PROPERTY BOUNDARY
- LOC — LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- TP — TREE PROTECTION FENCE
- STAGING & TEMPORARY SPOILS AREA
- STABILIZED CONSTRUCTION ENTRANCE
- INLET PROTECTION
- TEMPORARY ROCK BERM
- J-HOOKS

TREE LEGEND

- TREE REMAIN
- TREE REMAIN
- TREE REMOVE

NORTH ARROW & SCALE

0 100 200
SCALE 1:100

KEYMAP

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
9/25/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: May 22, 2015
PLOTTED: September 25, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

ENVIRONMENTAL PROTECTION PLAN

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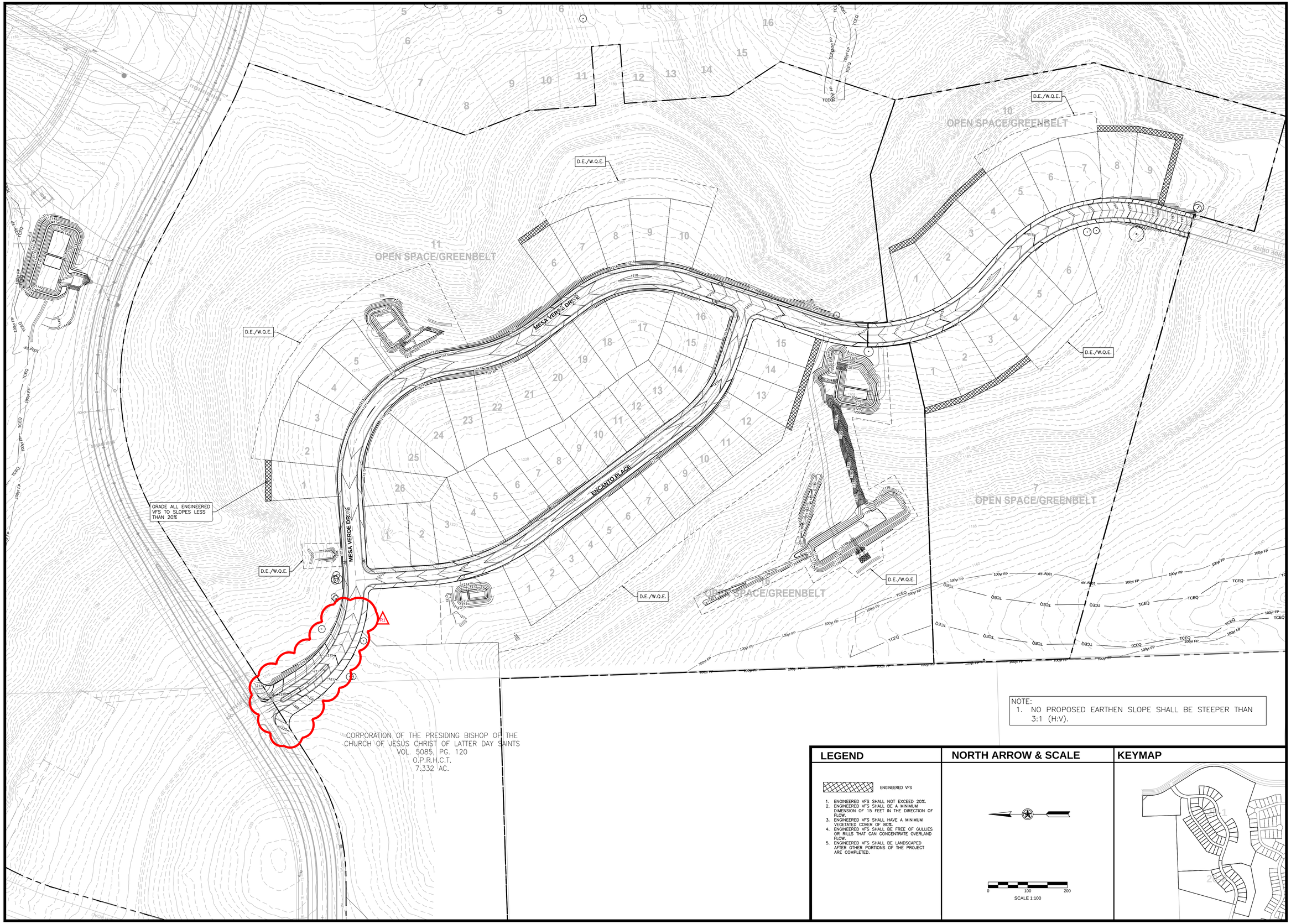

NOTE:
1. NO PROPOSED EARTHEN SLOPE SHALL BE STEEPER THAN 3:1 (H:V).

LEGEND

ENGINEERED VFS

1. ENGINEERED VFS SHALL NOT EXCEED 20%.
2. ENGINEERED VFS SHALL BE A MINIMUM DIMENSION OF 15 FEET IN THE DIRECTION OF FLOW.
3. ENGINEERED VFS SHALL HAVE A MINIMUM VEGETATED COVER OF 80%.
4. ENGINEERED VFS SHALL BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW.
5. ENGINEERED VFS SHALL BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.

NORTH ARROW & SCALE

0 100 200
SCALE 1:100

KEYMAP

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
9/25/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: May 1, 2017
PLOTTED: September 25, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

GRADING PLAN

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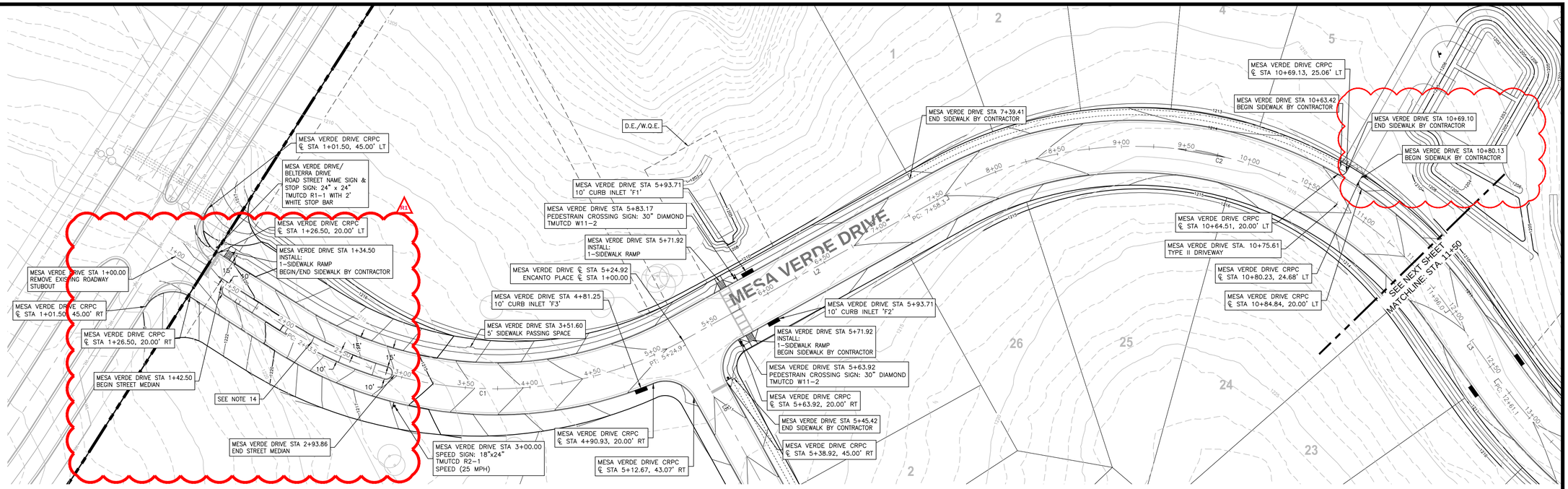
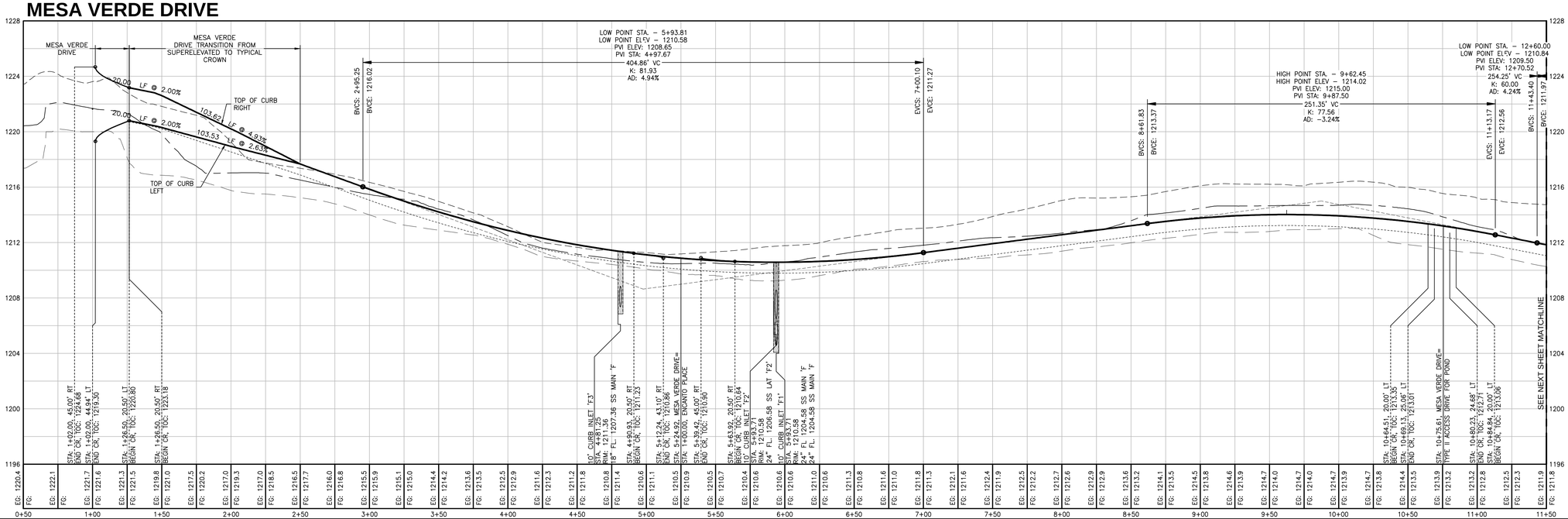


MESA VERDE DRIVE



PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK BY CONTRACTOR
- SIDEWALK BY OTHERS
- CURB AND GUTTER
- 755 PROPOSED CONTOURS
- 750 EXISTING CONTOURS
- VALLEY GUTTER DETAIL

SIGNAGE LEGEND

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- EX GRADE AT RT ROW LINE
- EX GRADE AT LT ROW LINE
- PR TOP OF CURB
- PR BASE GRADE BELOW CROWN
- EG: 686.3 EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 FINISHED GRADE ELEVATION AT STREET TOP OF CURB

STOP R1-1 | SPEED LIMIT 25 R2-1 | W11-2

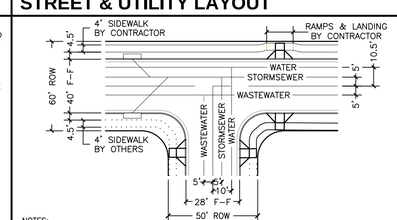
ALL STRIPING & SIGNAGE TO BE DONE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

SEE SHEET 35 FOR SIGN DETAIL

NOTES

1. WARNING: CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
3. CONTRACTOR SHALL REMOVE AND DISPOSE OF TREES 6" IN DIAMETER AND SMALLER ONLY WHEN NECESSARY. NO TREES LARGER THAN 6" IN DIAMETER OUTSIDE OF PAVED AREA SHALL BE REMOVED WITHOUT THE PERMISSION OF THE OWNER.
4. SIGNS AND DELINEATORS SHALL CONFORM TO TEXAS MANUAL ON UNIFORM TRAFFIC CONTROLS DEVICES (M.U.T.C.D.).
5. SIGNS AND OBJECT MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HAYS COUNTY ROAD DEPARTMENT.
6. SIDEWALKS ON LOCAL STREETS SHALL BE LOCATED 4' FROM BACK OF CURB. ALL SIDEWALKS ARE TO BE 4' WIDE (SEE DETAIL).
7. ALL SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF LICENSING AND REGULATIONS REQUIREMENTS.
8. PASSING SPACES TO BE PROVIDED ON SIDEWALKS AT A DISTANCE NOT TO EXCEED 200'. THE PASSING SPACE SHOULD BE A MINIMUM 5' WIDTH BY 5' LENGTH WITH NO MORE THAN A 2% CROSS SLOPE.
9. CONTRACTOR TO TAPER ALL CUT/FILL AT ROW AND REMOVE LOOSE MATERIALS TO LEAVE A CLEAN TRANSITION ADJACENT TO ROW. EXCEPTIONS TO THIS WOULD BE TO PRESERVE SIGNIFICANT HARDWOOD TREES. CONTRACTOR TO COORDINATE WITH OWNER.
10. SUBGRADE COMPACTION TO BE 95%. BASE COMPACTION TO BE 100%.
11. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED.
12. TRENCHES 5 FEET (1.5 METERS) DEEP OR GREATER REQUIRE A PROTECTIVE SYSTEM UNLESS THE EXCAVATION IS MADE ENTIRELY IN STABLE ROCK. IF LESS THAN 5 FEET DEEP, A COMPETENT PERSON MAY DETERMINE THAT A PROTECTIVE SYSTEM IS NOT REQUIRED.
13. TRENCHES 20 FEET (6.1 METERS) DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER OR BE BASED ON TABULATED DATA PREPARED AND/OR APPROVED BY A REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH 1926.652(B) AND (C).
14. INSTALL MOISTURE BARRIERS ALONG ALL CURBED MEDIANS PER GUIDELINES ON SHEET 35.

STREET & UTILITY LAYOUT



NOTES:
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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LINE & CURVE TABLE

SECTION 20-1

LINE TABLE			CURVE TABLE			
LINE #	LENGTH	DIRECTION	CURVE #	LENGTH	RADIUS	DELTA
L1	109.89	N32° 28' 53.76"W	C1	315.05	300.25	060.12
L2	233.34	S86° 07' 44.03"W	C2	437.74	300.00	083.60
L3	65.06	N10° 16' 05.19"W	C3	182.01	400.00	026.07
L4	131.58	N36° 20' 19.12"W	C4	286.83	300.00	054.78
L5	353.91	N18° 26' 29.60"E	C5	121.34	400.02	017.38
L6	179.04	S03° 52' 15.97"E	C6	288.62	500.00	033.07
L7	489.87	S36° 56' 40.27"E	C7	181.24	300.00	034.61
L8	158.67	S71° 33' 30.40"E				

SECTION 20-2

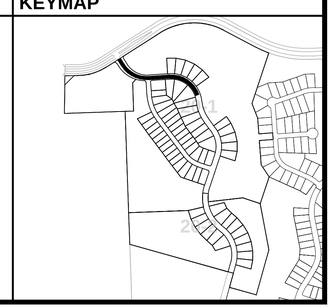
LINE TABLE			CURVE TABLE			
LINE #	LENGTH	DIRECTION	CURVE #	LENGTH	RADIUS	DELTA
L9	74.06	S49° 14' 04.41"E	C8	351.13	400.00	050.29
L10	101.89	S15° 37' 52.40"W	C9	396.24	350.00	064.87

NORTH ARROW & SCALE

0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
9/25/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL
TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: May 5, 2015
PLOTTED: September 25, 2017
PLOTTED BY: tescod11

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: MESA VERDE DRIVE, STA: 1+00.00-11+50.00

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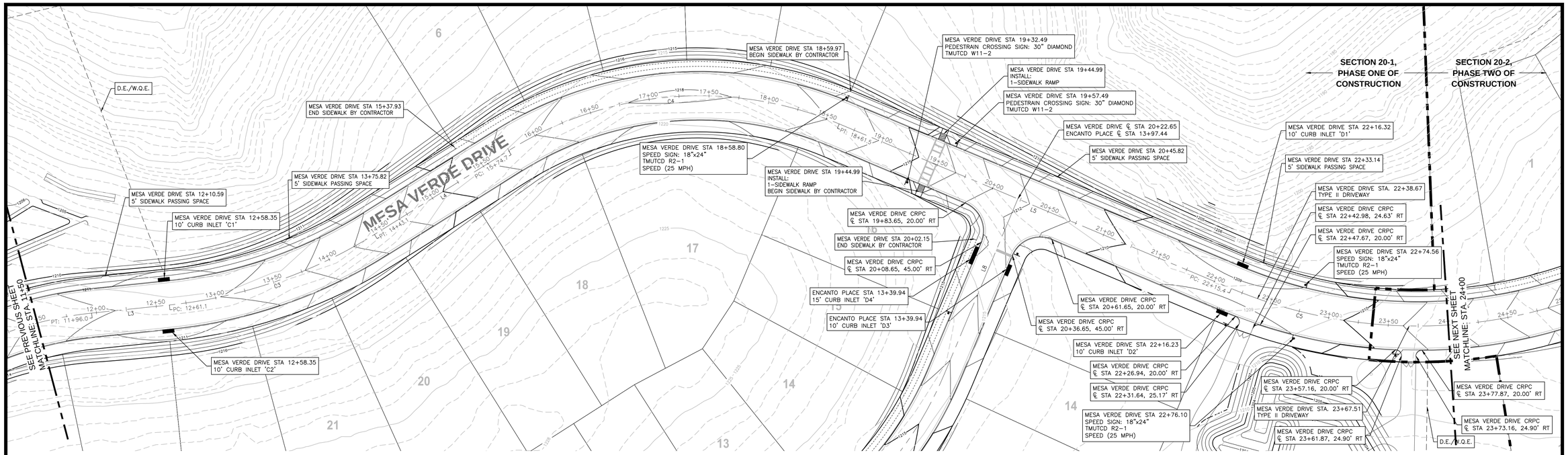
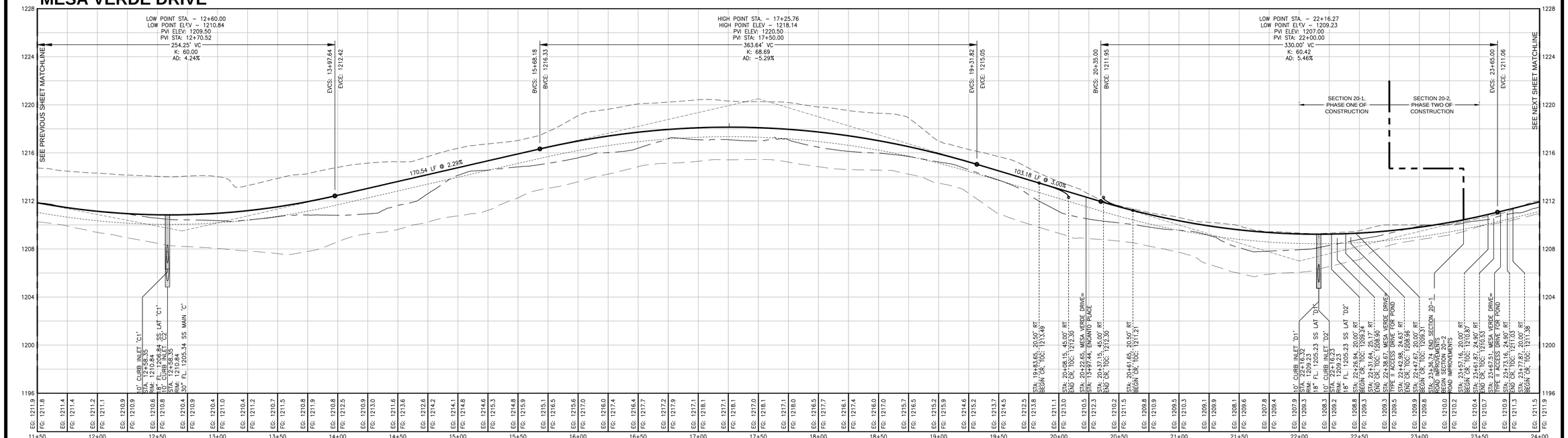


MESA VERDE DRIVE



PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK BY CONTRACTOR
- SIDEWALK BY OTHERS
- CURB AND GUTTER
- PROPOSED CONTOURS (755)
- EXISTING CONTOURS (750)
- VALLEY GUTTER DETAIL

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- EX GRADE AT RT ROW LINE
- EX GRADE AT LT ROW LINE
- PR TOP OF CURB
- PR BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET TOP OF CURB

SIGNAGE LEGEND

STOP (R1-1) · SPEED LIMIT 25 (R2-1) · (W11-2)

ALL STRIPING & SIGNAGE TO BE DONE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

SEE SHEET 35 FOR SIGN DETAIL

NOTES

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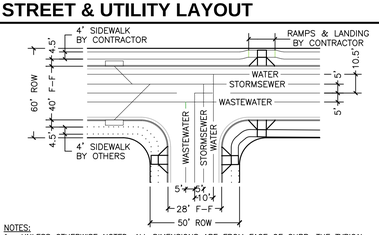
14. INSTALL MOISTURE BARRIERS ALONG ALL CURBED MEDIANS PER GUIDELINES ON SHEET 35.

STREET & UTILITY LAYOUT



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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LINE & CURVE TABLE

SECTION 20-1

LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	109.89	N32° 28' 53.76"W
L2	233.34	S86° 07' 44.03"W
L3	65.06	N10° 16' 05.19"W
L4	131.58	N36° 20' 19.12"W
L5	353.91	N18° 26' 29.60"E
L6	179.04	S03° 52' 15.97"E
L7	489.87	S36° 56' 40.27"E
L8	158.67	S71° 33' 30.40"E

CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
C1	315.05	300.25	060.12
C2	437.74	300.00	083.60
C3	182.01	400.00	026.07
C4	286.83	300.00	054.78
C5	121.34	400.02	017.38
C6	288.62	500.00	033.07
C7	181.24	300.00	034.61

SECTION 20-2

LINE TABLE		
LINE #	LENGTH	DIRECTION
L9	74.06	S49° 14' 04.41"E
L10	101.89	S15° 37' 52.40"W

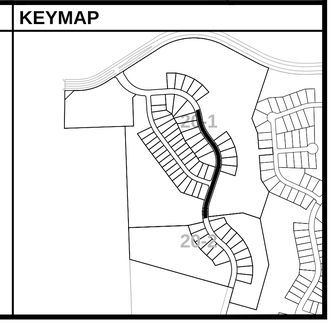
CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
C8	351.13	400.00	050.29
C9	396.24	350.00	064.87

NORTH ARROW & SCALE

0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS — STEPHEN R. DELGADO — 99342 — LICENSED PROFESSIONAL ENGINEER — 8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

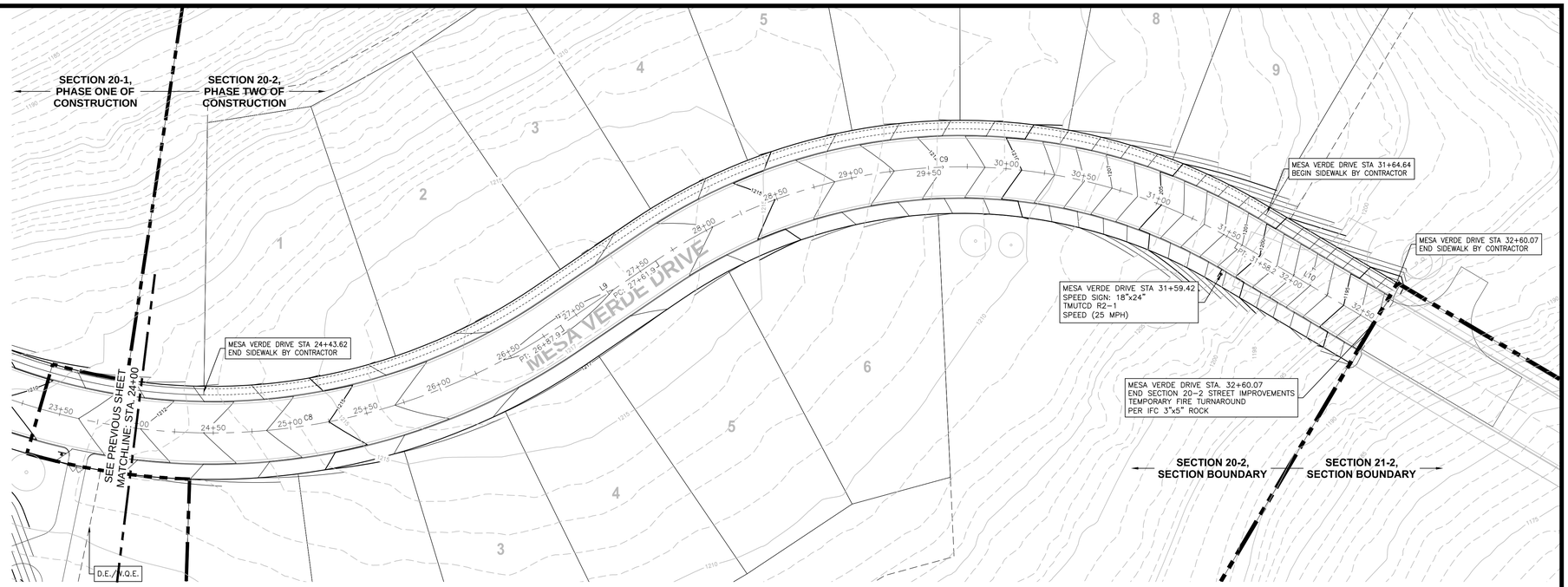
NO	DATE - DESCRIPTION

EDITED: May 5, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

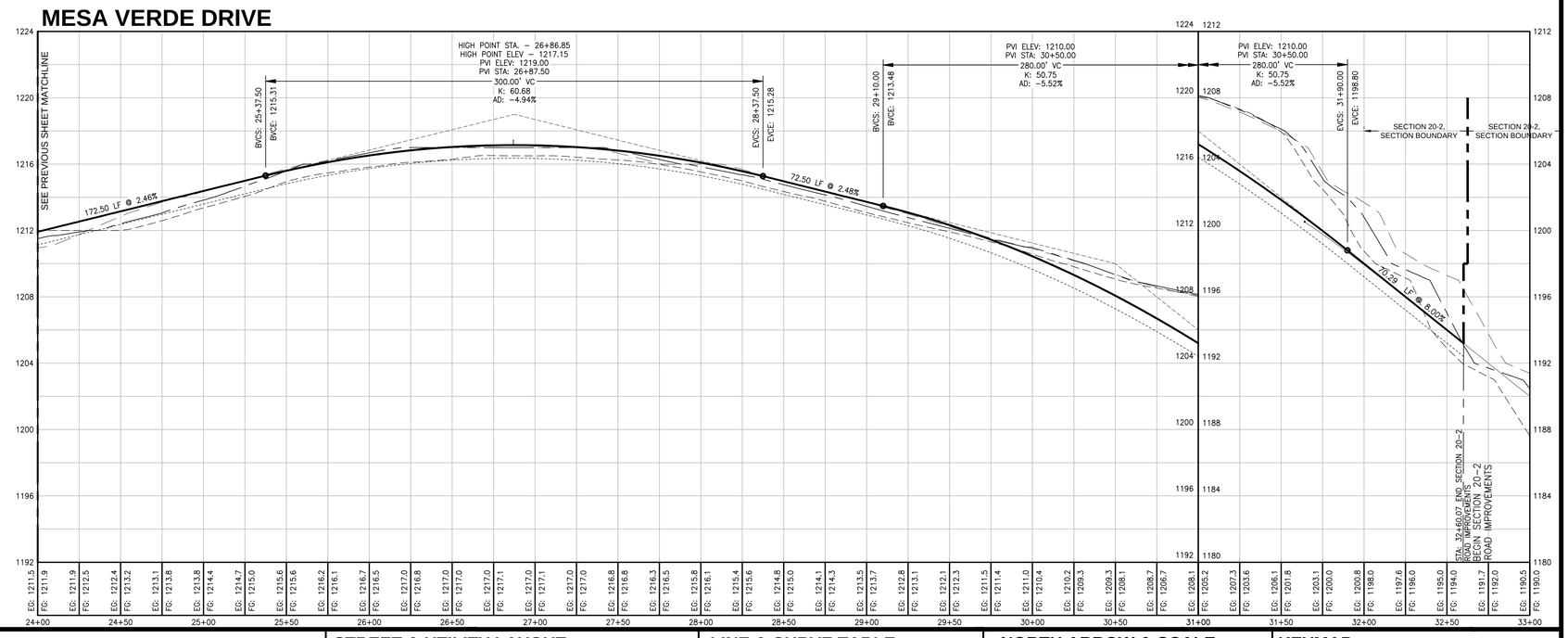
BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: MESA VERDE DRIVE, STA: 11+50.00-24+00.00

T:\Private\Mission\Crescent Belterra\Design\PH 1 SEC 20\Data Construction\S-CRESBELTRA_PH1_SEC20-SP-MESA.dwg



MESA VERDE DRIVE



PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK BY CONTRACTOR
- SIDEWALK BY OTHERS
- CURB AND GUTTER
- 750 PROPOSED CONTOURS
- 750 EXISTING CONTOURS
- VALLEY GUTTER DETAIL

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- EX GRADE AT RT ROW LINE
- EX GRADE AT LT ROW LINE
- PR TOP OF CURB
- PR BASE GRADE BELOW CROWN
- EG: 686.3 EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 FINISHED GRADE ELEVATION AT STREET TOP OF CURB

SIGNAGE LEGEND

STOP R1-1 | SPEED LIMIT 25 R2-1 | W11-2

ALL STRIPING & SIGNAGE TO BE DONE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

SEE SHEET 35 FOR SIGN DETAIL

NOTES

1. WARNING: CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
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4. SIGNS AND DELINEATORS SHALL CONFORM TO TEXAS MANUAL ON UNIFORM TRAFFIC CONTROLS DEVICES (M.U.T.C.D.).
5. SIGNS AND OBJECT MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HAYS COUNTY ROAD DEPARTMENT.
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11. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED.
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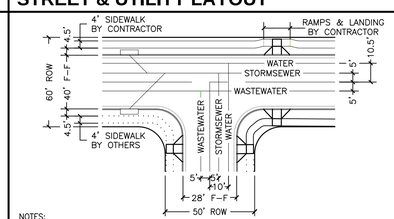
13. TRENCHES 20 FEET (6.1 METERS) DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER OR BE BASED ON TABULATED DATA PREPARED AND/OR APPROVED BY A REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH 1926.652(B) AND (C).
14. INSTALL MOISTURE BARRIERS ALONG ALL CURBED MEDIANS PER GUIDELINES ON SHEET 35.

STREET & UTILITY LAYOUT



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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LINE & CURVE TABLE

SECTION 20-1

LINE TABLE			CURVE TABLE			
LINE #	LENGTH	DIRECTION	CURVE #	LENGTH	RADIUS	DELTA
L1	109.89	N32° 28' 53.76"W	C1	315.05	300.25	060.12
L2	233.34	S86° 07' 44.03"W	C2	437.74	300.00	083.60
L3	65.06	N10° 16' 05.19"W	C3	182.01	400.00	026.07
L4	131.58	N36° 20' 19.12"W	C4	286.83	300.00	054.78
L5	353.91	N18° 26' 29.60"E	C5	121.34	400.02	017.38
L6	179.04	S03° 52' 15.97"E	C6	288.62	500.00	033.07
L7	489.87	S36° 56' 40.27"E	C7	181.24	300.00	034.61
L8	158.67	S71° 33' 30.40"E				

SECTION 20-2

LINE TABLE			CURVE TABLE			
LINE #	LENGTH	DIRECTION	CURVE #	LENGTH	RADIUS	DELTA
L9	74.06	S49° 14' 04.41"E	C8	351.13	400.00	050.29
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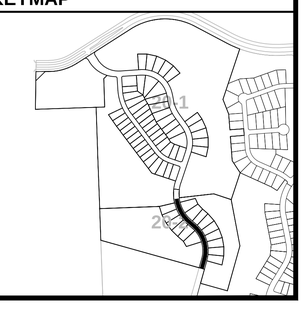
NORTH ARROW & SCALE

0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

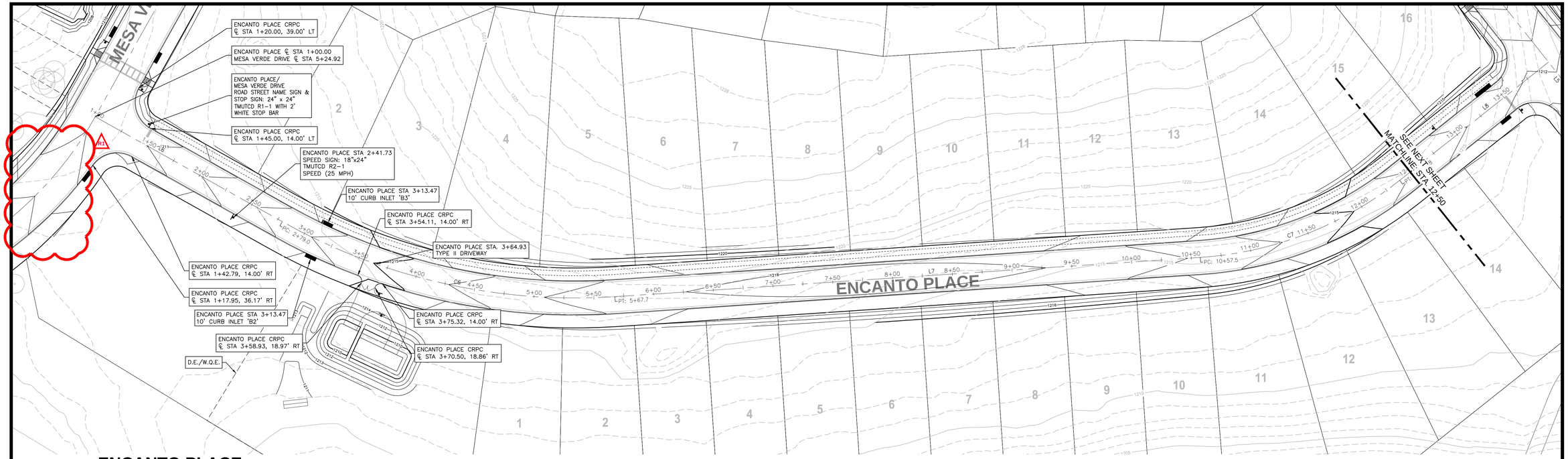
NO	DATE - DESCRIPTION

EDITED: May 5, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

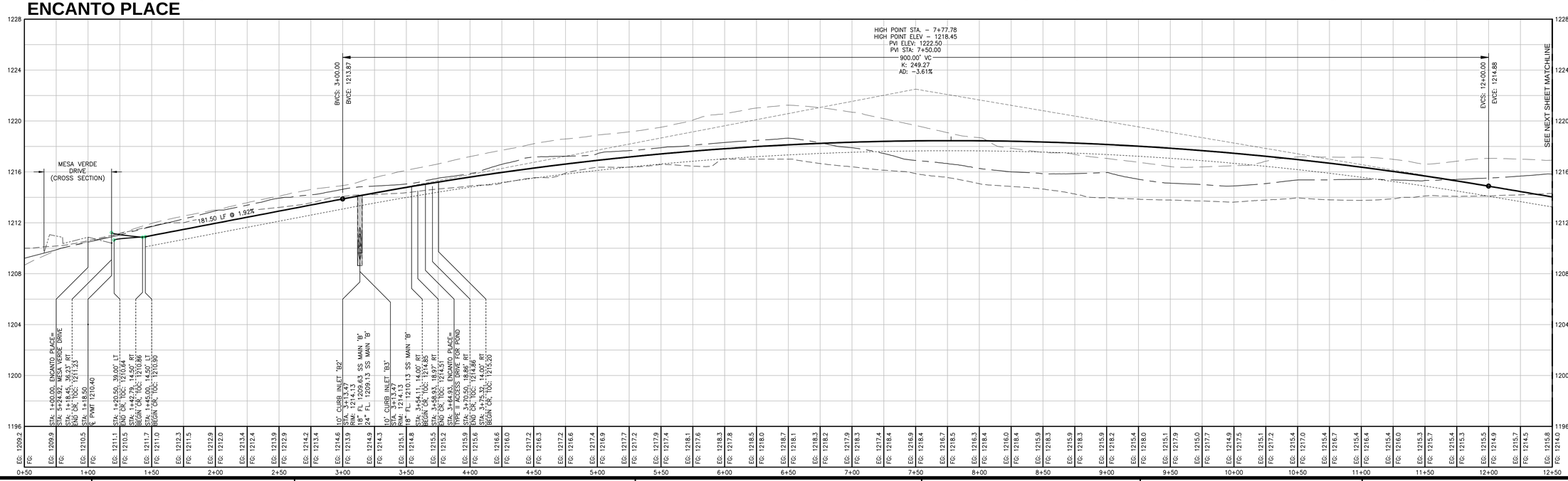
BELTERRA
SECTION 20-1 & 20-2

PLAN & PROFILE: MESA VERDE DRIVE, STA: 24+00.00-END

T:\Private\Mission\Crescent Belterra\Design\Pht 1 SEC 20\Site Construction\G-GRESBELTRA_Pht1_SEC20-SITP-MESA.dwg



ENCANTO PLACE



PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK BY CONTRACTOR
- SIDEWALK BY OTHERS
- CURB AND GUTTER
- PROPOSED CONTOURS
- EXISTING CONTOURS
- VALLEY GUTTER DETAIL

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- EX GRADE AT RT ROW LINE
- EX GRADE AT LT ROW LINE
- PR TOP OF CURB
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- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET TOP OF CURB

SIGNAGE LEGEND

STOP (R1-1) · SPEED LIMIT 25 (R2-1) · (W11-2)

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SEE SHEET 35 FOR SIGN DETAIL

NOTES

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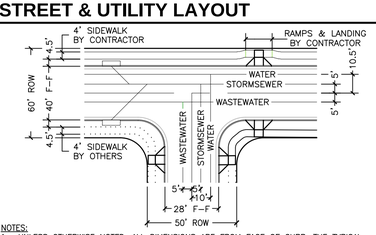
STREET & UTILITY LAYOUT



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LINE & CURVE TABLE

SECTION 20-1

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CURVE #	LENGTH	RADIUS	DELTA
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C7	181.24	300.00	034.61

SECTION 20-2

LINE TABLE		
LINE #	LENGTH	DIRECTION
L9	74.06	S49° 14' 04.41"E
L10	101.89	S15° 37' 52.40"W

CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
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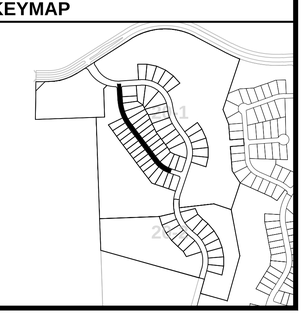
NORTH ARROW & SCALE

0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS · STEPHEN R. DELGADO · 99342 · LICENSED · PROFESSIONAL ENGINEER · 9/25/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

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IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

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11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

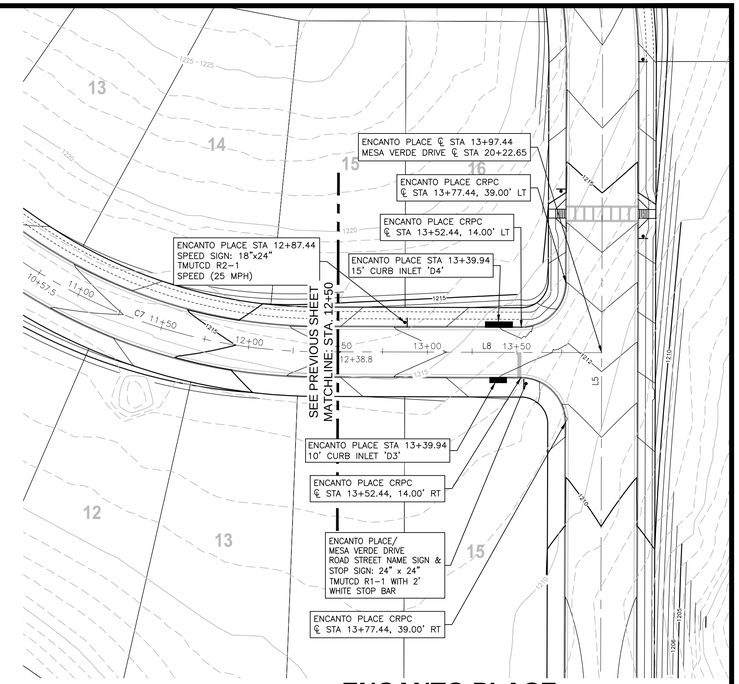
NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: May 7, 2015
PLOTTED: September 25, 2017
PLOTTED BY: tescod11

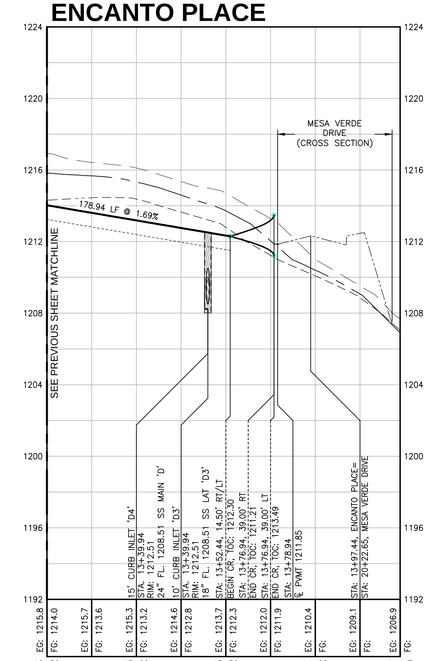
BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: ENCANTO PLACE, STA: 1+00.00-12+50.00

T:\Private\Master\Crescent Belterra\Design\PH 1 SEC 20\Data Construction\S-CRESBELTRA_PH1_SEC20-SP-ENCANTO.dwg



ENCANTO PLACE



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
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8/22/17

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O: 512-904-0505
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PROJECT DATA

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PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION

EDITED: May 7, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: ENCANTO PLACE, STA: 12+50.00-END

PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK BY CONTRACTOR
- SIDEWALK BY OTHERS
- CURB AND GUTTER
- 755 PROPOSED CONTOURS
- 750 EXISTING CONTOURS
- VALLEY GUTTER DETAIL

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- EX GRADE AT CENTERLINE
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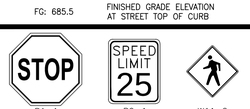
SIGNAGE LEGEND



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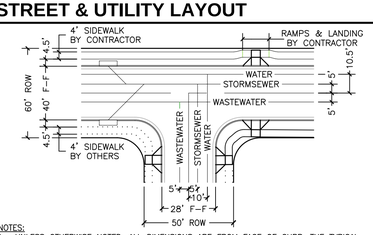
10. SUBGRADE COMPACTION TO BE 95%. BASE COMPACTION TO BE 100%.
11. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED.
12. TRENCHES 5 FEET (1.5 METERS) DEEP OR GREATER REQUIRE A PROTECTIVE SYSTEM UNLESS THE EXCAVATION IS MADE ENTIRELY IN STABLE ROCK. IF LESS THAN 5 FEET DEEP, A COMPETENT PERSON MAY DETERMINE THAT A PROTECTIVE SYSTEM IS NOT REQUIRED.
13. TRENCHES 20 FEET (6.1 METERS) DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER OR BE BASED ON TABULATED DATA PREPARED AND/OR APPROVED BY A REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH 1926.652(B) AND (C).
14. INSTALL MOISTURE BARRIERS ALONG ALL CURBED MEDIANS PER GUIDELINES ON SHEET 35.

STREET & UTILITY LAYOUT



NOTES:
1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF CURB. THE TYPICAL CURB RETURN RADIUS (FROM FACE OF CURB) IS 25'. ALL CURB RAMPS AS WELL AS SIDEWALKS SHOWN AS SOLID LINES ARE TO BE CONSTRUCTED BY CONTRACTOR WITH THIS CONTRACT. VALLEY GUTTERS SHALL BE INSTALLED ONLY WHERE CALLED FOR IN THESE PLANS.
2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LINE & CURVE TABLE

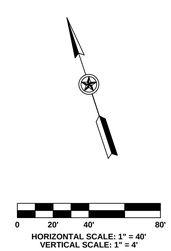
SECTION 20-1

LINE TABLE			CURVE TABLE				
LINE #	LENGTH	DIRECTION	CURVE #	LENGTH	RADIUS	DELTA
L1	109.89	N32° 28' 53.76"W	C1	315.05	300.25	060.12
L2	233.34	S86° 07' 44.03"W	C2	437.74	300.00	083.60
L3	65.06	N10° 16' 05.19"W	C3	182.01	400.00	026.07
L4	131.58	N36° 20' 19.12"W	C4	286.83	300.00	054.78
L5	353.91	N18° 26' 29.60"E	C5	121.34	400.02	017.38
L6	179.04	S03° 52' 15.97"E	C6	288.62	500.00	033.07
L7	489.87	S36° 56' 40.27"E	C7	181.24	300.00	034.61
L8	158.67	S71° 33' 30.40"E				

SECTION 20-2

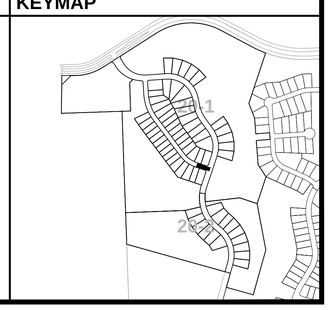
LINE TABLE			CURVE TABLE				
LINE #	LENGTH	DIRECTION	CURVE #	LENGTH	RADIUS	DELTA
L9	74.06	S49° 14' 04.41"E	C8	351.13	400.00	050.29
L10	101.89	S15° 37' 52.40"W	C9	396.24	350.00	064.87

NORTH ARROW & SCALE

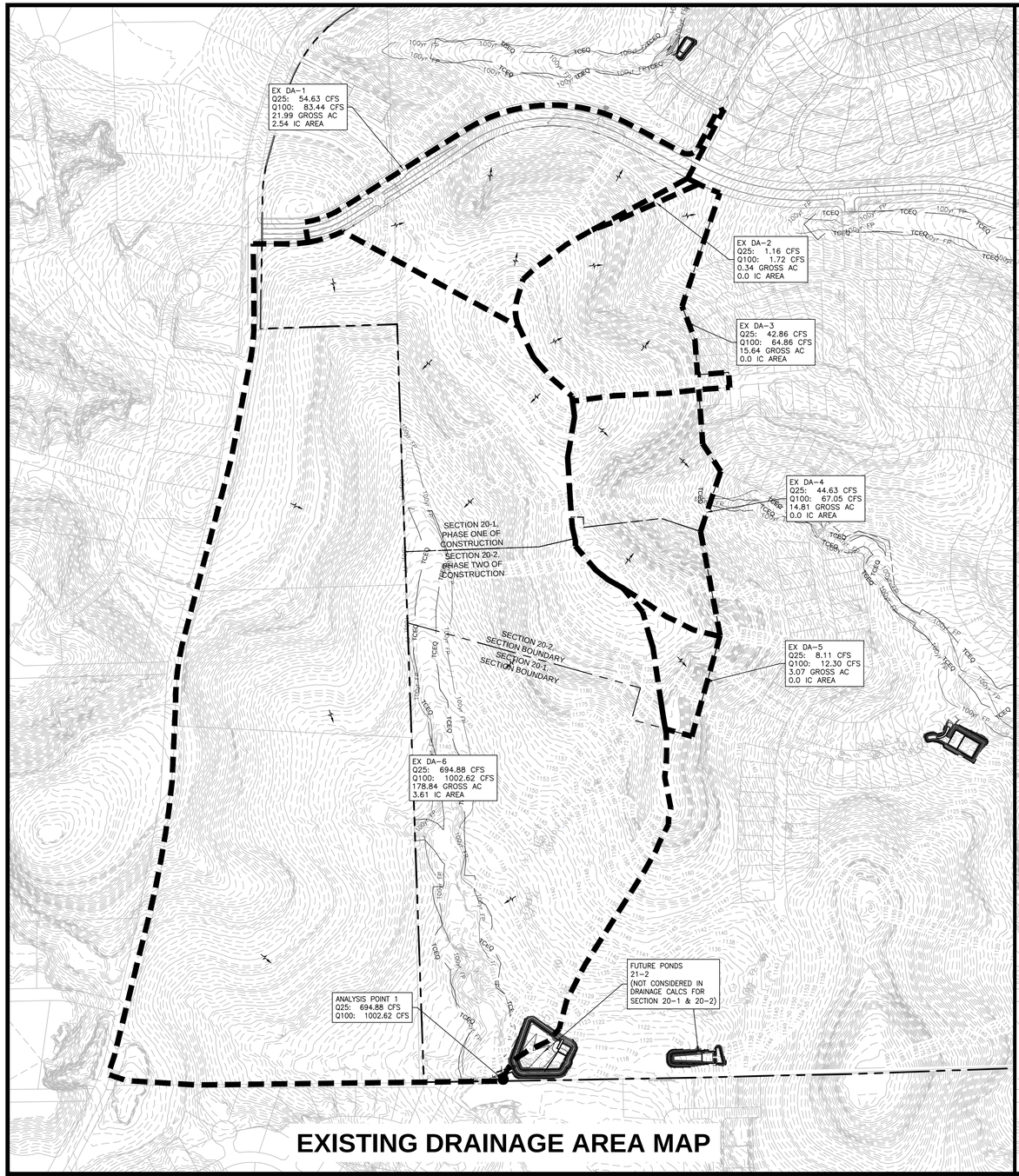


HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

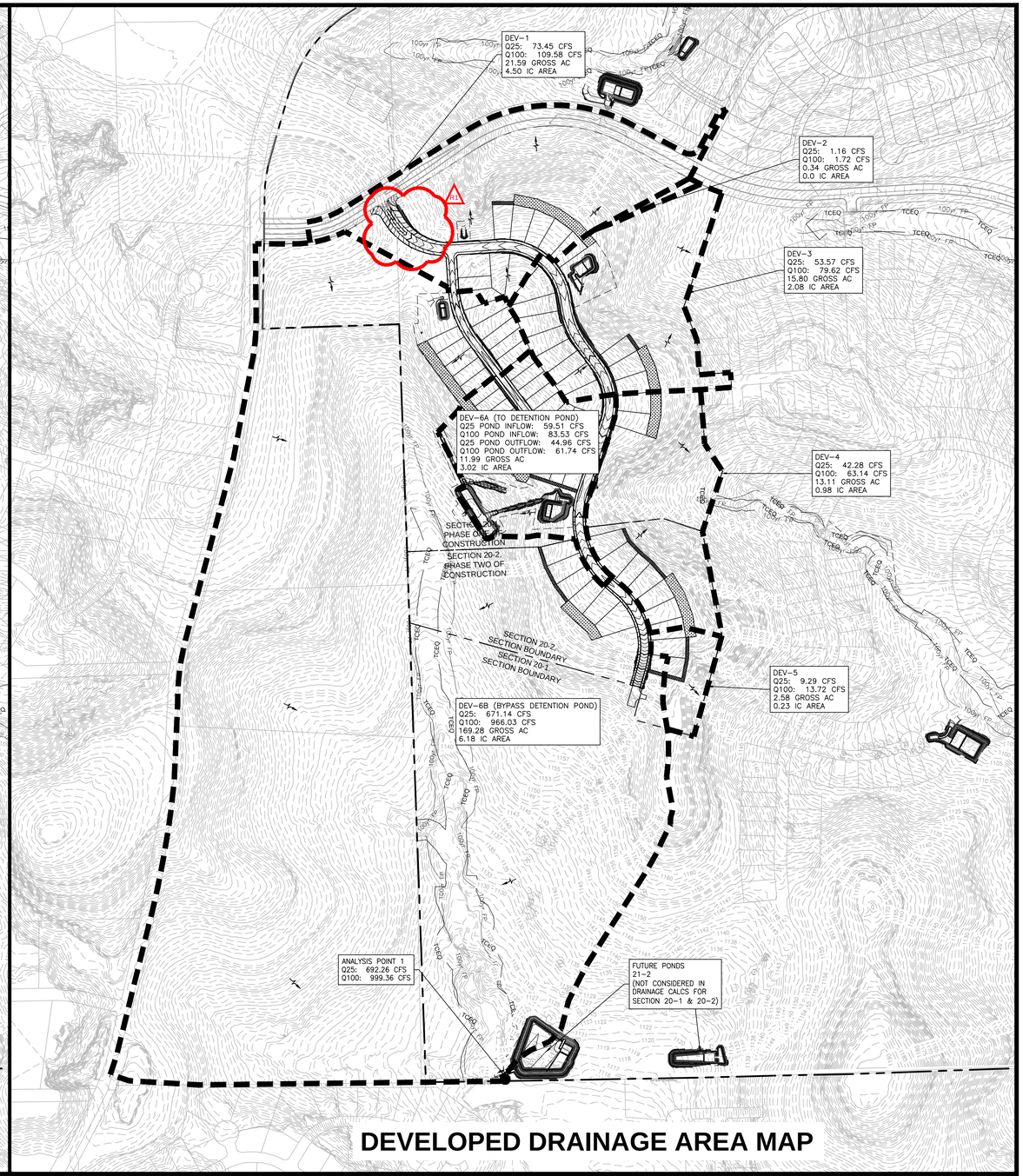
KEYMAP



T:\Private\Maxus\Crescent_Belterra\Design\PH 1 SEC 20\Sht Construction\S-CRESBELTRA_PH1_SEC20-STP-ENCANTO.dwg



EXISTING DRAINAGE AREA MAP



DEVELOPED DRAINAGE AREA MAP

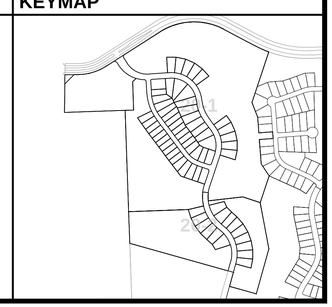
LEGEND

- EXISTING CONTOURS
- DRAINAGE AREA BOUNDARY
- STORM SEWER LINE
- FLOW ARROW
- DRAINAGE SWALE
- XX / XXXX Ac. — DRAINAGE AREA DESIGNATION AND ACREAGE DRAINED
- 100yr FP — 100yr FLOODPLAIN
- TCEQ — TCEQ BUFFER ZONE

NORTH ARROW & SCALE

0 150' 300' 600'
SCALE: 1" = 300'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
9/25/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: August 21, 2015
PLOTTED: September 25, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

DRAINAGE AREA MAP: EXISITING CONDITIONS AND DEVELOPED CONDITIONS

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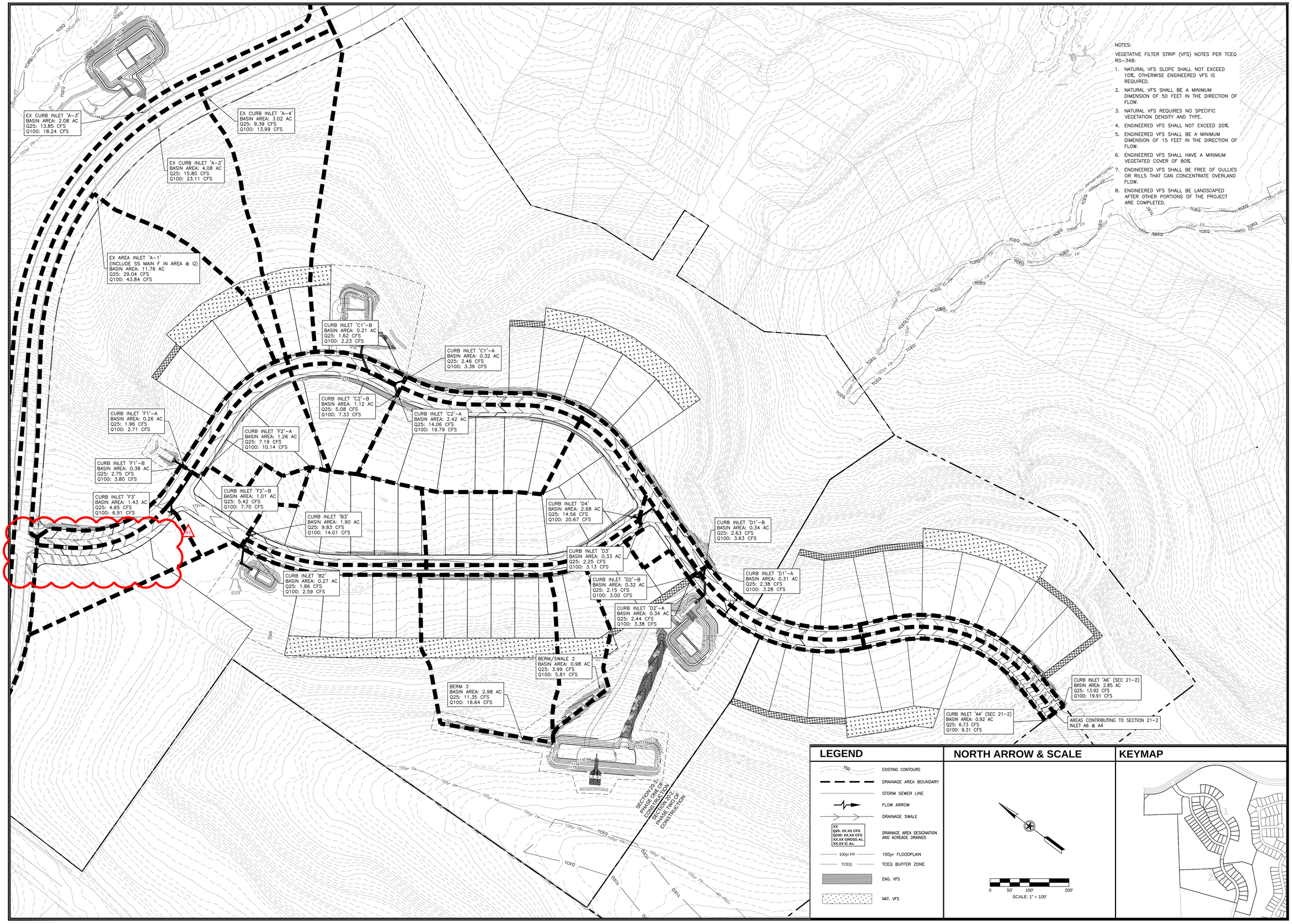

NOTES:

VEGETATIVE FILTER STRIP (VFS) NOTES PER TCEQ RG-348:

1. NATURAL VFS SLOPE SHALL NOT EXCEED 10%, OTHERWISE ENGINEERED VFS IS REQUIRED.
2. NATURAL VFS SHALL BE A MINIMUM DIMENSION OF 50 FEET IN THE DIRECTION OF FLOW.
3. NATURAL VFS REQUIRES NO SPECIFIC VEGETATION DENSITY AND TYPE.
4. ENGINEERED VFS SHALL NOT EXCEED 20%.
5. ENGINEERED VFS SHALL BE A MINIMUM DIMENSION OF 15 FEET IN THE DIRECTION OF FLOW.
6. ENGINEERED VFS SHALL HAVE A MINIMUM VEGETATED COVER OF 80%.
7. ENGINEERED VFS SHALL BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW.
8. ENGINEERED VFS SHALL BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
9/25/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

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11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: August 21, 2015
PLOTTED: September 25, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

DRAINAGE AREA MAP: STORM SEWER SYSTEM

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Drainage Calculations

BASIN			Area (AC)	Composite "C"				Sheet Flow					Shallow Concentrated Flow Pervious					Shallow Concentrated Flow Pavement					Cumulative TC (min)	Intensity				Design Discharge Q (cfs)			
Basin Area	To Inlet	%IC		2-YR	10-YR	25-YR	100-YR	Length	n	▲z	Slope (%)	TC (min)	Length	n	▲z	Slope (%)	TC (min)	Length	n	▲z	Slope (%)	TC (min)		2-Year	10-Year	25-Year	100-Year	2-Year	10-Year	25-Year	100-Year
A-1 (INCLUDE SS MAIN F)	EX A1	14.8%	12.035	0.39	0.44	0.48	0.56	100	0.300	3.0	3.00%	4.124	1193	0.300	68.0	5.70%	24.985	0	0.020	0.0	0.00%	0.000	29.11	2.73	4.14	4.98	6.53	**12.80**	**22.08**	**29.04**	**43.84**
A-2	EX A2	25.9%	4.080	0.43	0.49	0.53	0.61	100	0.300	4.0	4.03%	3.559	576	0.300	55.1	9.57%	9.309	220	0.020	2.2	1.00%	0.733	13.60	4.06	6.08	7.25	9.30	**7.19**	**12.20**	**15.80**	**23.11**
A-3	EX A3	64.1%	2.075	0.59	0.66	0.66	0.74	9	0.300	0.2	2.00%	0.455	0	0.300	0.0	0.00%	0.000	1525	0.016	85.4	5.60%	1.718	5.00	5.76	8.57	10.11	11.88	**7.00**	**11.66**	**13.85**	**18.24**
A-4	EX A4	10.7%	3.022	0.37	0.43	0.47	0.54	100	0.300	4.5	4.48%	3.376	698	0.300	55.8	7.99%	12.344	233	0.020	2.3	0.99%	0.782	16.50	3.71	5.57	6.65	8.59	**4.18**	**7.17**	**9.39**	**13.99**
C1 - A	C1	75.9%	0.322	0.63	0.71	0.75	0.84	20	0.020	0.4	2.00%	0.067	0	0.300	0.0	0.00%	0.000	462	0.020	7.0	1.52%	1.251	5.00	5.76	8.57	10.11	12.54	**1.18**	**1.95**	**2.46**	**3.39**
C1 - B		76.5%	0.211	0.64	0.71	0.76	0.84	20	0.020	0.4	2.00%	0.067	0	0.300	0.0	0.00%	0.000	303	0.020	4.0	1.32%	0.879	5.00	5.76	8.57	10.11	12.54	**0.77**	**1.28**	**1.62**	**2.23**
C2 - A	C2	37.5%	2.420	0.48	0.54	0.59	0.66	100	0.300	4.0	4.00%	3.571	44	0.300	6.0	13.64%	0.596	455	0.020	7.0	1.54%	1.223	5.39	5.65	8.40	9.92	12.34	**6.56**	**11.01**	**14.06**	**19.79**
C2 - B		32.7%	1.117	0.46	0.52	0.56	0.64	100	0.300	1.0	1.00%	7.143	150	0.300	13.0	8.67%	2.548	246	0.020	3.0	1.22%	0.743	10.43	4.54	6.78	8.06	10.25	**2.34**	**3.94**	**5.08**	**7.33**
F1 - A	F1	72.9%	0.261	0.62	0.69	0.74	0.83	20	0.020	0.4	2.00%	0.067	0	0.300	0.0	0.00%	0.000	380	0.020	3.0	0.79%	1.426	5.00	5.76	8.57	10.11	12.54	**0.94**	**1.55**	**1.96**	**2.71**
F1 - B		67.2%	0.379	0.60	0.67	0.72	0.80	50	0.300	2.0	4.00%	1.786	0	0.300	0.0	0.00%	0.000	357	0.020	7.0	1.96%	0.850	5.00	5.76	8.57	10.11	12.54	**1.31**	**2.17**	**2.75**	**3.80**
F2 - A	F2	35.3%	1.264	0.47	0.53	0.58	0.65	100	0.300	5.0	5.00%	3.194	74	0.300	7.0	9.46%	1.203	313	0.020	3.0	0.96%	1.066	5.46	5.62	8.37	9.89	12.30	**3.35**	**5.63**	**7.19**	**10.14**
F2 - B		36.2%	1.008	0.47	0.54	0.58	0.66	100	0.300	6.0	6.00%	2.916	141	0.300	6.5	4.61%	3.284	218	0.020	2.5	1.15%	0.679	6.88	5.26	7.84	9.28	11.63	**2.52**	**4.24**	**5.42**	**7.70**
F3	F3	12.2%	1.429	0.38	0.43	0.47	0.55	100	0.300	3.0	3.00%	4.124	423	0.300	15.0	3.55%	11.231	0	0.020	0.0	0.00%	0.000	15.36	3.84	5.76	6.87	8.85	**2.08**	**3.56**	**4.65**	**6.91**
B3	B3	34.7%	1.901	0.47	0.53	0.57	0.65	100	0.300	2.5	2.50%	4.518	88	0.300	7.5	8.52%	1.507	442	0.020	4.3	0.97%	1.494	7.52	5.11	7.62	9.03	11.35	**4.56**	**7.67**	**9.83**	**14.01**
B2	B2	57.7%	0.273	0.56	0.63	0.67	0.76	20	0.300	0.5	2.50%	0.904	0	0.300	0.0	0.00%	0.000	451	0.020	3.7	0.82%	1.660	5.00	5.76	8.57	10.11	12.54	**0.88**	**1.47**	**1.86**	**2.59**
D1-A	D1	75.4%	0.313	0.63	0.70	0.75	0.84	20	0.300	0.2	0.75%	1.650	0	0.300	0.0	0.00%	0.000	436	0.020	8.0	1.83%	1.073	5.00	5.76	8.57	10.11	12.54	**1.14**	**1.89**	**2.38**	**3.28**
D1-B	D1	77.6%	0.342	0.64	0.71	0.76	0.85	20	0.300	0.4	2.00%	1.010	0	0.300	0.0	0.00%	0.000	488	0.020	8.0	1.64%	1.270	5.00	5.76	8.57	10.11	12.54	**1.26**	**2.09**	**2.63**	**3.63**
D2-A	D2	67.6%	0.337	0.60	0.67	0.72	0.80	20	0.300	0.5	2.50%	0.904	0	0.300	0.0	0.00%	0.000	484	0.020	7.5	1.55%	1.296	5.00	5.76	8.57	10.11	12.54	**1.16**	**1.93**	**2.44**	**3.38**
D2-B	D2	54.5%	0.323	0.55	0.61	0.66	0.74	100	0.300	4.2	4.20%	3.485	0	0.300	0.0	0.00%	0.000	95	0.020	0.8	0.84%	0.345	5.00	5.76	8.57	10.11	12.54	**1.02**	**1.70**	**2.15**	**3.00**
D3	D3	57.7%	0.330	0.56	0.63	0.67	0.76	20	0.300	0.2	1.00%	1.429	0	0.300	0.0	0.00%	0.000	553	0.020	5.4	0.98%	1.865	5.00	5.76	8.57	10.11	12.54	**1.07**	**1.78**	**2.25**	**3.13**
D4	D4	39.1%	2.678	0.49	0.55	0.59	0.67	100	0.300	3.3	3.30%	3.932	86	0.300	6.7	7.80%	1.539	509	0.020	5.4	1.06%	1.647	7.12	5.21	7.76	9.18	11.52	**6.78**	**11.39**	**14.56**	**20.67**
A4 (21-2)	A4 (21-2)	68.7%	0.921	0.60	0.68	0.72	0.81	40	0.020	0.8	2.00%	0.135	0	0.300	0.0	0.00%	0.000	1295	0.020	69.0	5.33%	1.870	5.00	5.76	8.57	10.11	12.54	**3.21**	**5.33**	**6.73**	**9.31**
A6 (21-2)	A6 (21-2)	22.4%	2.849	0.42	0.48	0.52	0.59	100	0.300	5.0	5.00%	3.194	172	0.300	17.0	9.88%	2.736	460	0.020	30.0	6.52%	0.600	6.53	5.35	7.96	9.42	11.78	**6.39**	**10.81**	**13.92**	**19.91**
BERM 3	BERM 3	17.0%	2.978	0.40	0.45	0.49	0.57	100	0.300	5.0	5.00%	3.194	467	0.300	35.0	7.49%	8.529	0	0.020	0.0	0.00%	0.000	11.72	4.33	6.48	7.71	9.83	**5.13**	**8.74**	**11.35**	**16.64**
BERM/SWALE 2	BERM/SWALE 2	14.0%	0.981	0.39	0.44	0.48	0.55	100	0.300	4.0	4.00%	3.571	342	0.300	31.5	9.21%	5.634	0	0.020	0.0	0.00%	0.000	9.21	4.77	7.11	8.44	10.68	**1.81**	**3.07**	**3.99**	**5.81**

INLET CAPACITY 25 YR					CURB INLET ON GRADE								SUMP INLET (CURB, AREA, OR GRATE)								
Drainage Area	Inlet	Qpass taken (cfs)	Q(25) (cfs)	Q (a)	Yo (ft)	Qa/La (cfs/ft)	Length Needed (ft)	Length (ft)	L/Lreq	a/Yo	Q allowable (cfs)	Qpass (cfs)	Clogging Factor	Q(25) (cfs)	Q (a)	Length (ft)	h (ft)	Yo (ft)	Q allowable (cfs)	Qpass (cfs)
A-1 (INCLUDE SS MAIN F)	EX A1	0.00	29.04	29.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	50%	29.04	29.04	20	1.49	N/A	54.5*	0.00
A-2	EX A2	0.00	15.80	15.80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10%	15.80	15.80	15	0.84	0.52	31.4*	0.00
A-3	EX A3	0.00	13.85	13.85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10%	13.85	13.85	10	0.78	0.63	18.5*	0.00
A-4	EX A4	0.00	9.39	9.39	0.65	1.15	8.17	20	2.45	0.64	22.98*	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
C1 - A C1 - B	C1	0.00	4.08	4.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	4.08	4.08	10	0.77	0.35	23.71	0.00
C2 - A C2 - B	C2	0.00	19.13	19.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	19.13	19.13	10	0.95	0.53	23.71	0.00
F1 - A F1 - B	F1	0.00	4.70	4.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	4.70	4.70	10	0.72	0.30	23.71	0.00
F2 - A F2 - B	F2	0.00	12.61	12.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	12.61	12.61	10	0.87	0.46	23.71	0.00
F3	F3	0.00	4.65	4.65	0.30	0.75	6.21	10	1.61	1.41	7.49	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B3	B3	0.00	9.83	9.83	0.50	0.97	10.13	15	1.48	0.83	14.55	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B2	B2	0.00	1.86	1.86	0.31	0.76	2.43	10	4.11	1.34	7.65	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D1-A D1-B	D1	0.00	5.01	5.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	5.01	5.01	10	0.69	0.28	23.71	0.00
D2-A D2-B	D2	0.01	4.60	4.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	4.60	4.61	10	0.71	0.29	23.71	0.00
D3	D3	0.00	2.25	2.25	0.32	0.78	2.90	10	3.45	1.30	7.76	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D4	D4	0.00	14.56	14.56	0.50	0.97	15.01	15	1.00	0.83	14.55	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A4 (21-2)	A4 (21-2)	0.00	6.73	6.73	0.33	0.79	8.55	10	1.17	1.26	7.86	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A6 (21-2)	A6 (21-2)	0.00	13.92	13.92	0.41	0.87	15.96	15	0.94	1.01	13.08	0.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00

*SEE DRAINAGE CALCULATIONS (BELTERRA - PHASE 4, SECTION 1, BELTERRA DRIVE IMPROVEMENTS)

INLET CAPACITY 100 YR					CURB INLET ON GRADE								SUMP INLET (CURB OR GRATE)								
Drainage Area	Inlet	Qpass taken (cfs)	Q(100) (cfs)	Q (a)	Yo (ft)	Qa/La (cfs/ft)	Length Needed (ft)	Length (ft)	L/Lreq	a/Yo	Q allowable (cfs)	Qpass (cfs)	Clogging Factor	Q(100) (cfs)	Q (a)	Length (ft)	h (ft)	Yo (ft)	Q allowable (cfs)	Qpass (cfs)
A-1 (INCLUDE SS MAIN F)	EX A1	0.00	43.84	43.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	50%	43.84	43.84	20	1.49	N/A	54.5*	0.00
A-2	EX A2	0.00	23.11	23.11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10%	23.11	23.11	15	0.84	0.52	31.4*	0.00
A-3	EX A3	0.00	18.24	18.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10%	18.24	18.24	10	0.78	0.63	18.5*	0.00
A-4	EX A4	0.00	13.99	13.99	0.65	1.15	12.17	20	1.64	0.64	22.98	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
C1 - A C1 - B	C1	3.41	5.63	9.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	5.63	9.04	10	0.91	0.49	23.71	0.00
C2 - A C2 - B	C2	0.00	27.12	27.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	27.12	27.12	10	1.01	0.60	23.71	3.41
F1 - A F1 - B	F1	0.00	6.51	6.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	6.51	6.51	10	0.77	0.36	23.71	0.00
F2 - A F2 - B	F2	0.00	17.84	17.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	17.84	17.84	10	0.93	0.51	23.71	0.00
F3	F3	0.00	6.91	6.91	0.34	0.79	8.70	10	1.15	1.23	7.94	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B3	B3	0.00	14.01	14.01	0.50	0.97	14.45	15	1.04	0.83	14.55	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B2	B2	0.00	2.59	2.59	0.35	0.80	3.23	10	3.10	1.20	8.02	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D1-A D1-B	D1	0.00	6.91	6.91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	6.91	6.91	10	0.73	0.31	23.71	0.00
D2-A D2-B	D2	6.12	6.38	12.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	6.38	12.50	10	0.74	0.32	23.71	0.00
D3	D3	0.00	3.13	3.13	0.36	0.81	3.84	10	2.61	1.16	8.15	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D4	D4	0.00	20.67	20.67	0.50	0.97	21.31	15	0.70	0.83	14.55	6.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A4 (21-2)	A4 (21-2)	0.00	9.31	9.31	0.37	0.83	11.24	10	0.89	1.12	8.28	1.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A6 (21-2)	A6 (21-2)	0.00	19.91	19.91	0.47	0.93	21.37	15	0.70	0.89	13.98	5.93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00

*SEE DRAINAGE CALCULATIONS (BELTERRA - PHASE 4, SECTION 1, BELTERRA DRIVE IMPROVEMENTS)

STREET CAPACITY 25 YR				STREET CAPACITY						
Drainage Area	Inlet	Qpass taken (cfs)	Q(25) (cfs)	Q(a) (cfs)	Street Width (ft)	Slope (ft/ft)	k0	k1	k2	Yo (ft)	Ponded Width
A-1 (INCLUDE SS MAIN F)	EX A1	0.00	29.04	Inlet NOT in street							
A-2	EX A2	0.00	15.80	15.80	48	0.0800	2.83	0.50	2.78	0.52	24.00
A-3	EX A3	0.00	13.85	13.85	48	0.0100	2.83	0.50	2.78	0.63	24.00
A-4	EX A4	0.00	9.39	9.39	48	0.0100	2.83	0.50	2.78	0.65	24.00
C1 - A	C1	1.86	2.46	4.32	40	0.0152	2.85	0.50	2.89	0.35	6.50
C1 - B		0.00	1.62	1.62	40	0.0132	2.85	0.50	2.89	0.26	4.46
C2 - A	C2	0.00	14.06	14.06	40	0.0154	2.85	0.50	2.89	0.53	20.00
C2 - B		0.00	5.08	5.08	40	0.0122	2.85	0.50	2.89	0.39	7.31
F1 - A	F1	0.00	1.96	1.96	40	0.0079	2.85	0.50	2.89	0.30	5.35
F1 - B		0.00	2.75	2.75	40	0.0196	2.85	0.50	2.89	0.29	5.10
F2 - A	F2	0.00	7.19	7.19	40	0.0096	2.85	0.50	2.89	0.46	9.09
F2 - B		1.02	5.42	6.44	40	0.0115	2.85	0.50	2.89	0.43	8.26
F3	F3	0.00	4.65	4.65	40	0.0494	2.85	0.50	2.89	0.30	5.24
B3	B3	0.00	9.83	9.83	28	0.0097	2.85	0.50	3.03	0.52	14.00
B2	B2	0.00	1.86	1.86	28	0.0082	2.85	0.50	3.03	0.31	5.00
D1-A	D1	0.00	2.38	2.38	40	0.0183	2.85	0.50	2.89	0.28	4.87
D1-B		0.00	2.63	2.63	40	0.0164	2.85	0.50	2.89	0.29	5.20
D2-A	D2	0.00	2.44	2.44	40	0.0155	2.85	0.50	2.89	0.29	5.10
D2-B		5.36	2.15	7.52	40	0.0084	2.85	0.50	2.89	0.47	9.60
D3	D3	0.00	2.25	2.25	28	0.0098	2.85	0.50	3.03	0.32	5.22
D4	D4	0.00	14.56	14.56	28	0.0106	2.85	0.50	3.03	0.59	14.00
A4 (21-2)	A4 (21-2)	0.00	6.73	6.73	40	0.0533	2.85	0.50	2.89	0.33	6.00
A6 (21-2)	A6 (21-2)	0.00	13.92	13.92	40	0.0652	2.85	0.50	2.89	0.41	7.89

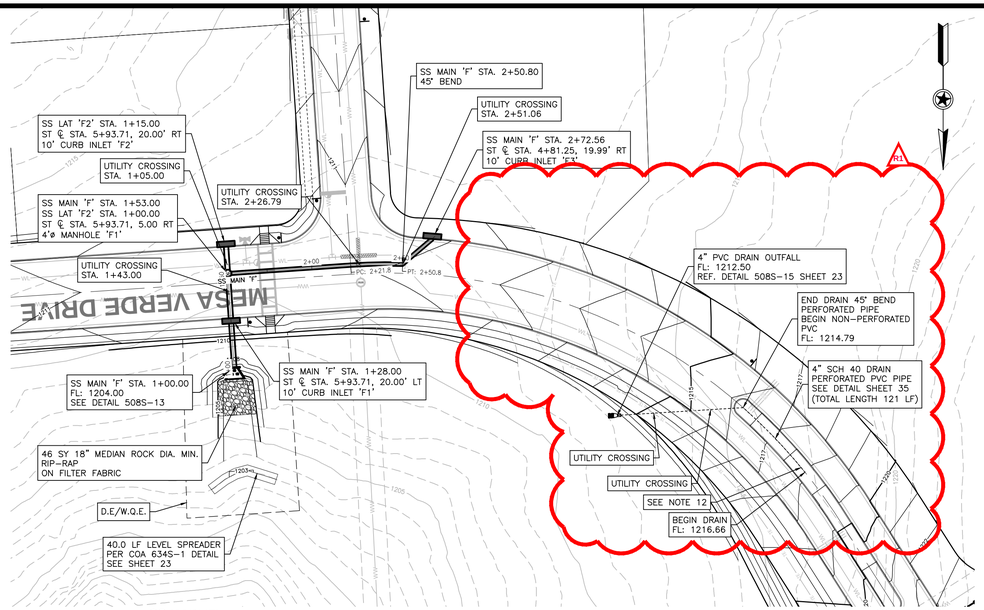
*SEE DRAINAGE CALCULATIONS (BELTERRA - PHASE 4, SECTION 1, BELTERRA DRIVE IMPROVEMENTS)

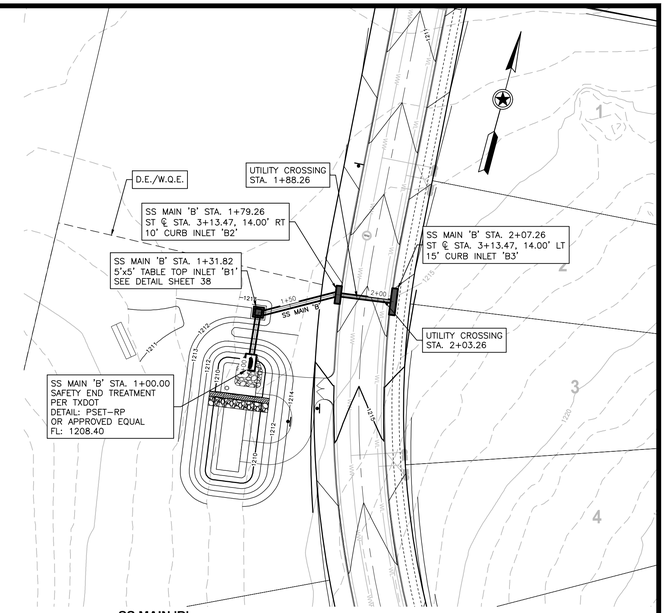
STREET CAPACITY 100 YR				STREET CAPACITY						
Drainage Area	Inlet	Qpass taken (cfs)	Q(100) (cfs)	Q(a) (cfs)	Street Width (ft)	Slope (ft/ft)	k0	k1	k2	Yo (ft)
A-1 (INCLUDE SS MAIN F)	EX A1	0.00	43.84	Inlet NOT in street						
A-2	EX A2	0.00	23.11	23.11	48	0.0800	2.83	0.50	2.78	0.52
A-3	EX A3	0.00	18.24	18.24	48	0.0100	2.83	0.50	2.78	0.63
A-4	EX A4	0.00	13.99	13.99	48	0.0100	2.83	0.50	2.78	0.65
C1 - A	C1	7.60	3.39	11.00	40	0.0152	2.85	0.50	2.89	0.49
C1 - B		0.00	2.23	2.23	40	0.0132	2.85	0.50	2.89	0.29
C2 - A	C2	0.00	19.79	19.79	40	0.0154	2.85	0.50	2.89	0.60
C2 - B		0.00	7.33	7.33	40	0.0122	2.85	0.50	2.89	0.44
F1 - A	F1	0.52	2.71	3.23	40	0.0079	2.85	0.50	2.89	0.36
F1 - B		2.38	3.80	6.18	40	0.0196	2.85	0.50	2.89	0.38
F2 - A	F2	0.00	10.14	10.14	40	0.0096	2.85	0.50	2.89	0.51
F2 - B		5.20	7.70	12.90	40	0.0115	2.85	0.50	2.89	0.54
F3	F3	0.00	6.91	6.91	40	0.0494	2.85	0.50	2.89	0.34
B3	B3	0.00	14.01	14.01	28	0.0097	2.85	0.50	3.03	0.59
B2	B2	0.00	2.59	2.59	28	0.0082	2.85	0.50	3.03	0.35
D1-A	D1	0.00	3.28	3.28	40	0.0183	2.85	0.50	2.89	0.31
D1-B		5.45	3.63	9.08	40	0.0164	2.85	0.50	2.89	0.45
D2-A	D2	0.00	3.38	3.38	40	0.0155	2.85	0.50	2.89	0.32
D2-B		11.47	3.00	14.47	40	0.0084	2.85	0.50	2.89	0.59
D3	D3	0.00	3.13	3.13	28	0.0098	2.85	0.50	3.03	0.36
D4	D4	0.00	20.67	20.67	28	0.0106	2.85	0.50	3.03	0.66
A4 (21-2)	A4 (21-2)	0.00	9.31	9.31	40	0.0533	2.85	0.50	2.89	0.37
A6 (21-2)	A6 (21-2)	0.00	19.91	19.91	40	0.0652	2.85	0.50	2.89	0.47

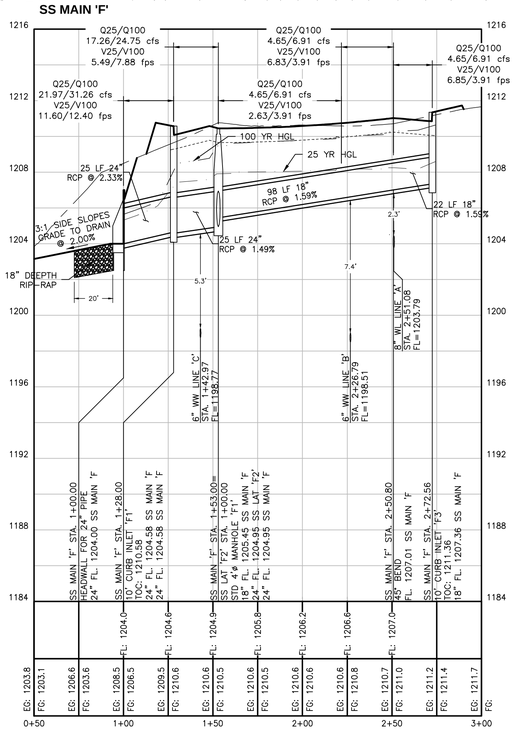
*SEE DRAINAGE CALCULATIONS (BELTERRA - PHASE 4, SECTION 1, BELTERRA DRIVE IMPROVEMENTS)

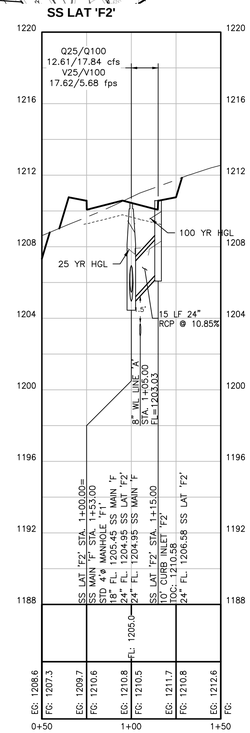
DEVELOPED DRAINAGE CALCS

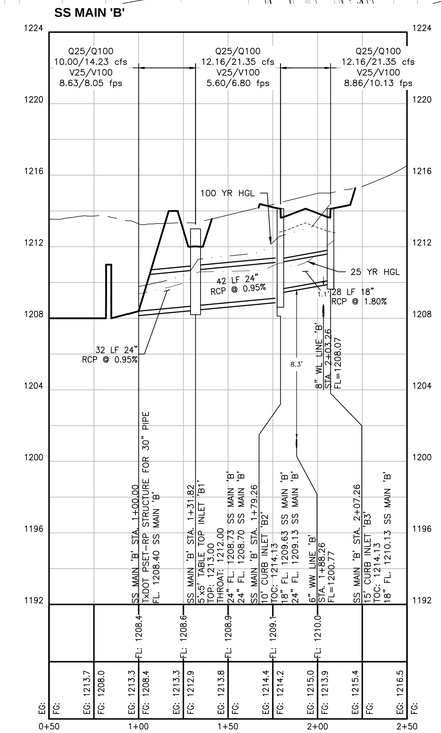
	DEV-1 (EX SS 'A', PH4 SEC1)	DEV-2 (BELTERRA DR)	DEV-3 (EX POND 16)	DEV-4 (BEAR CREEK)	DEV-5 (EX POND 21-1)	DEV-4A (POND 20-1/20-2)	DEV-4B (POND BYPASS)
Area (sf)	962,105	14,628	688,433	571,182	112,372	522,335	7,373,696
Area (ac)	22.55	0.34	15.80	13.11	2.58	11.991	169.277
Curve Number	82.79	79.00	81.50	80.41	80.69	83.78	79.69
Impervious Cover (sf)	195564	0	90995	42050	10000	131351	269208
Impervious Cover (ac)	4.50	0.00	2.08	0.96	0.23	3.02	6.18
Impervious Cover (%)	19.95%	0.00%	13.17%	7.44%	8.90%	25.147%	3.651%
Sheet Flow							
Length (ft)	100	100	100	100	100	100	100
Mannings	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Delta - Vertical Feet	8	10	10	6	10	2.75	5
Slope (ft/ft)	8.00%	10.00%	10.00%	6.00%	10.00%	2.75%	5.00%
2yr-24hr Rainfall (in)	4.00	4.00	5.00	5.00	4.00	6.00	4.00
Tc-Sheet (min)	7.91	7.23	7.23	8.87	7.23	12.12	9.54
Shallow Concentrated Flow - Pervious							
Length (ft)	47	367	242	503	144	437	1538
Mannings	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Delta - Vertical Feet	6	28	30	55	24	37	84
Slope (ft/ft)	12.77%	7.63%	12.40%	10.93%	16.67%	8.47%	5.46%
Tc-Shallow (min)	0.14	1.37	0.71	1.57	0.36	1.55	6.80
Shallow Concentrated Flow - Pavement							
Length (ft)	0	0	0	0	0	0	0
Mannings	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Delta - Vertical Feet	0	0	0	0	0	0	0
Slope (ft/ft)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Tc-Shallow (min)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concentrated Flow - Pipe							
Length (ft)	0	0	0	0	0	0	0
R (assumed)	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Mannings	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Delta - Vertical Feet	0	0	0	0	0	0	0
Slope (ft/ft)	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
V (1.49/n*R^2/3*S^.5 ft/sec)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To-Shallow (min)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concentrated Flow - Channel							
Length (ft)	660	0	339	0	0	0	1148
R (assumed)	0.509	0.509	0.509	0.509	0.509	0.509	0.900
Mannings	0.045	0.045	0.045	0.045	0.045	0.045	0.045
Delta - Vertical Feet	40	0	18	0	0	0	22
Slope (ft/ft)	6.06%	0.00%	5.31%	0.00%	0.00%	0.00%	1.92%
V (1.49/n*R^2/3*S^.5 ft/sec)	5.20	0.00	4.86	0.00	0.00	0.00	4.27
To-Concen (Length/Velocity) (min)	2.12	0.00	1.16	0.00	0.00	0.00	4.48
To-Total (min)	**10.16**	**8.60**	**9.10**	**10.44**	**7.59**	**13.67**	**20.82**
Tlag-Total (min)	**6.09**	**5.16**	**5.46**	**6.26**	**4.56**	**8.20**	**12.49**
Intensity							
i-2yr (min)	4.59	4.88	4.79	4.54	5.10	4.05	3.30
i-10yr (min)	6.85	7.28	7.14	6.78	7.60	6.07	4.96
i-25yr (min)	8.14	8.64	8.47	8.06	9.00	7.23	5.95
i-100yr (min)	10.34	10.91	10.72	10.25	11.32	9.28	7.73
RM Runoff Coefficient (Forest,Average)							
C-2yr	0.31	0.31	0.31	0.31	0.31	0.31	0.31
C-10yr	0.36	0.36	0.36	0.36	0.36	0.36	0.36
C-25yr	0.40	0.40	0.40	0.40	0.40	0.40	0.40
C-100yr	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Q = CiA (Rational Method)							
Q-2yr (cfs)	**32.09**	**0.51**	**23.45**	**18.46**	**4.08**	15.07	173.13
Q-10yr(cfs)	**55.63**	**0.88**	**40.62**	**32.02**	**7.06**	26.19	302.48
Q-25yr (cfs)	**73.45**	**1.16**	**53.57**	**42.28**	**9.29**	34.70	402.66
Q-100yr (cfs)	**109.58**	**1.72**	**79







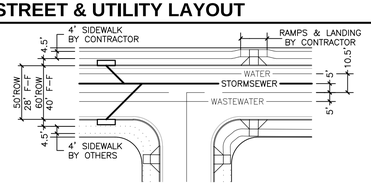




PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE
- FL: 645.5 — FLOW LINE

STREET & UTILITY LAYOUT



NOTES:
1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF CURB. THE TYPICAL CURB RETURN RADIUS (FROM FACE OF CURB) IS 25'. ALL CURB RAMPS AS WELL AS SIDEWALKS SHOWN AS SOLID LINES ARE TO BE CONSTRUCTED BY CONTRACTOR WITH THIS CONTRACT. VALLEY GUTTERS SHALL BE INSTALLED ONLY WHERE CALLED FOR IN THESE PLANS.
2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

- 750 — EXISTING CONTOURS
- PHASE BOUNDARY/ROW
- DOUBLE WATER SERVICE
- SINGLE WATER SERVICE
- WL — WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- WM — EX. WATER METER
- T — ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- FM — WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW — WW MANHOLE AS NOTED
- WW — WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- SS LINE AS NOTED
- SS — STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
2. BEFORE DIGGING CALL TEXAS 811
3. CAUTION!!! THE DEPTH OF EXISTING UNDERGROUND ELECTRICAL, GAS AND TELECOMM UTILITIES IS UNKNOWN. CONTRACTOR SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY PROVIDERS.
4. STORM SEWER MANHOLE LIDS SHALL NOT REFERENCE CITY OF AUSTIN.
5. ALL MANHOLES SHALL BE 4' DIA. UNLESS OTHERWISE SPECIFIED.
6. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THE INLET.
7. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
8. ALL PIPE BEDDING SHALL BE ¾" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACED ON TOP OF GRAVEL. (NO SAND)
9. COMPACTION AND TESTING REQUIREMENTS FOR MANHOLES:
   A. THE TRENCH AROUND THE MANHOLE SHOULD BE PRE-FILLED IN COMPACTED LAYERS USING THE SAME PROCESS AS ALL UTILITY TRENCHES.
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THE TRENCH.
12. INSTALL MOISTURE BARRIERS ALONG ALL CURB MEDIANS PER GUIDELINES PER SHEET 35.

NORTH ARROW & SCALE

0 20' 40' 80'
HORIZONTAL SCALE: 1" = 40'
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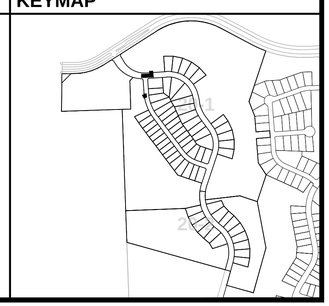
KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
10/18/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

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400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

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11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

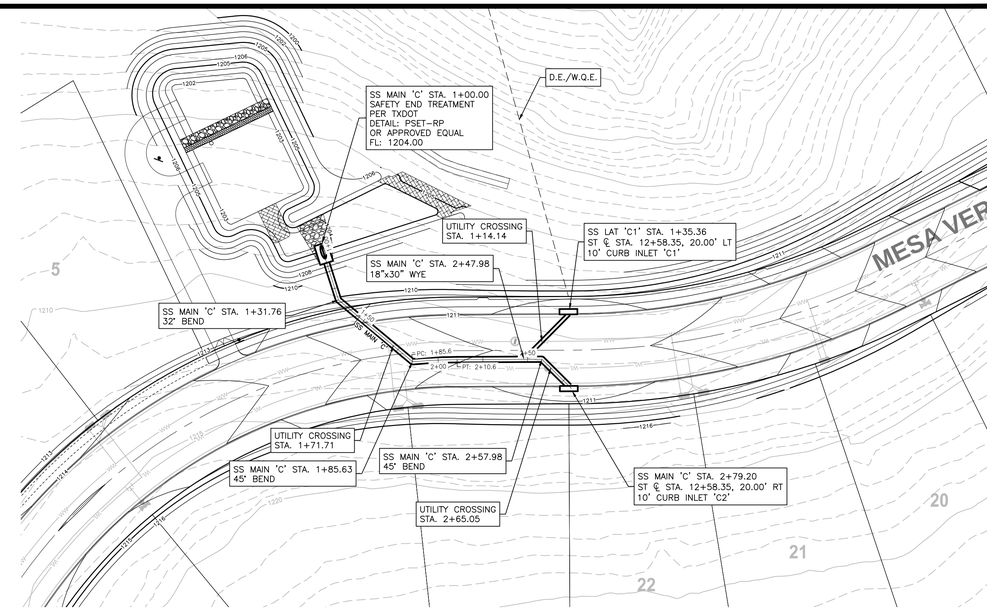
NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

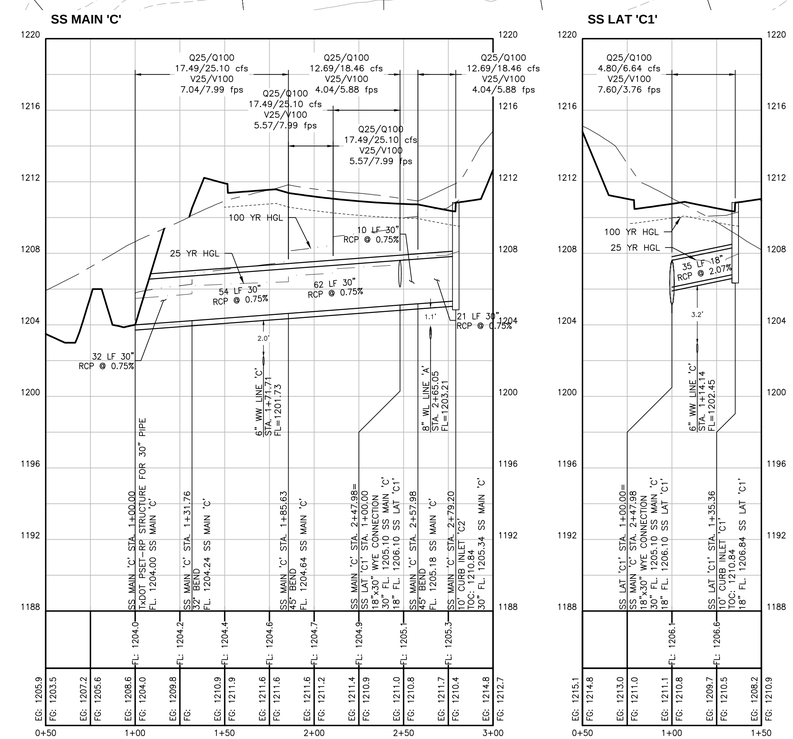
EDITED: May 15, 2015
PLOTTED: October 18, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: STORM SEWER MAIN 'F' AND 'B', STA: 0+50-END

T:\Private\Mesa\Crescent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-PSP-MAIN 24.dwg





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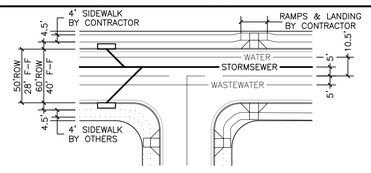
STREET & UTILITY LAYOUT



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NORTH ARROW & SCALE

0 20' 40' 80'

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KEYMAP

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O: 512-904-0505
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TBPE No. 11206

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FINAL PLAT NUMBER:	XXXXX
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REVISIONS

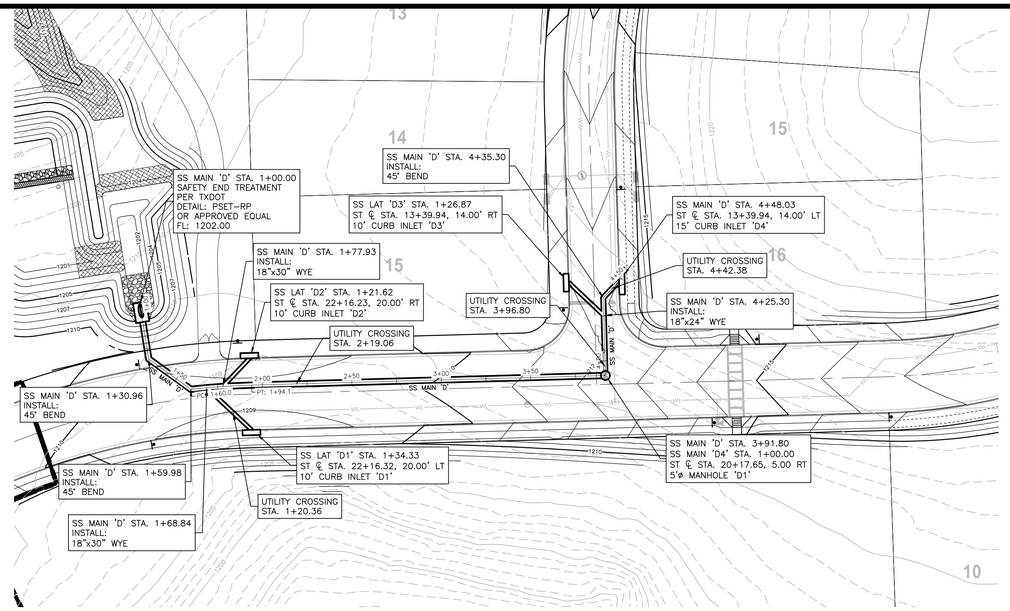
NO	DATE - DESCRIPTION

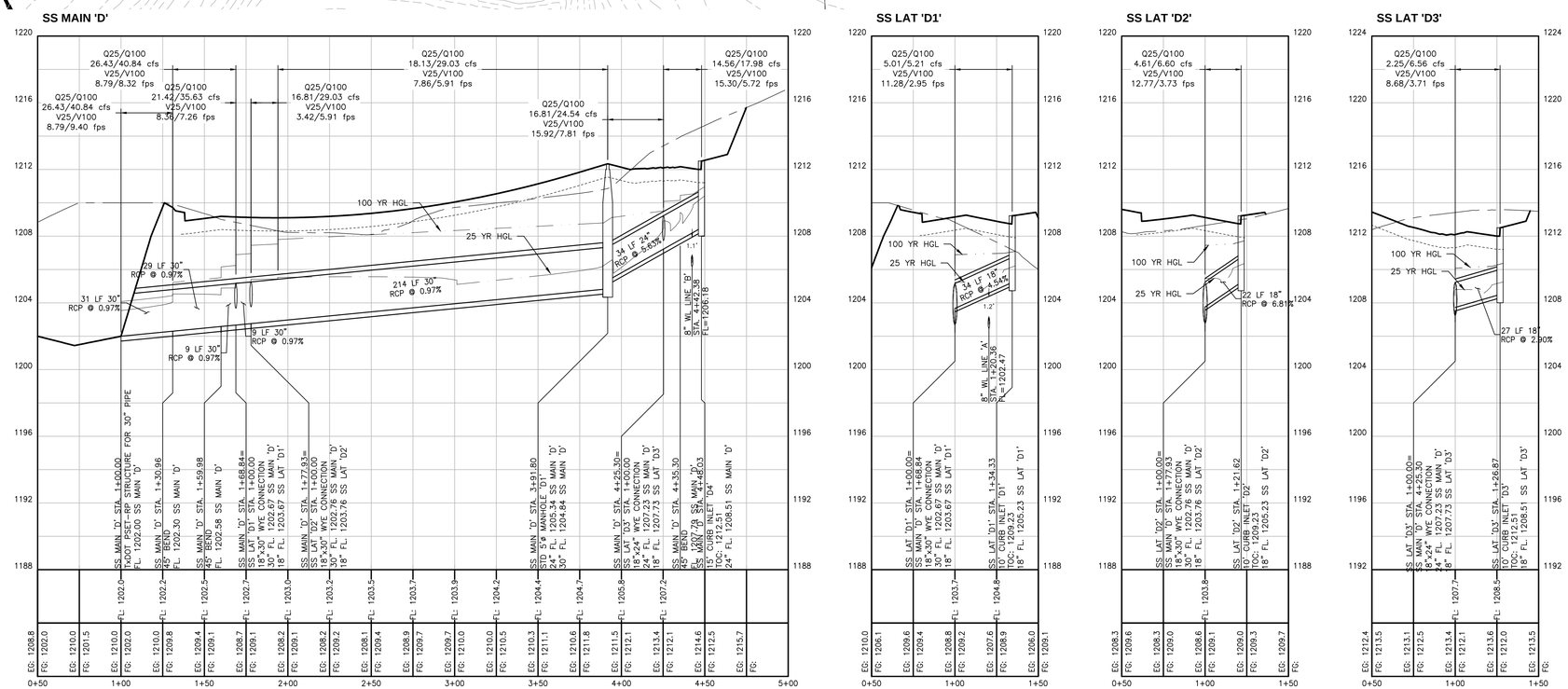
EDITED: May 15, 2015
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: STORM SEWER MAIN 'C', STA: 0+50-END

T:\Private\Vulcan\Crescent Beltterra\Design\PH 1 SEC 20\Sms Construction\S-CRESBELTRA_PH1_SEC20-SSP-MAIN X.dwg





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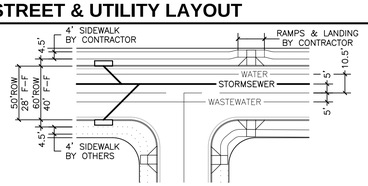

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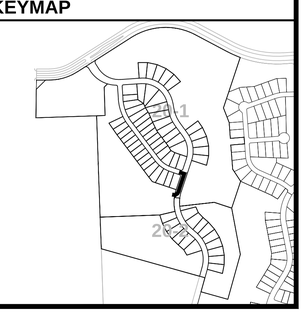

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REVISIONS

NO	DATE - DESCRIPTION

EDITED: May 18, 2015
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: STORM SEWER MAIN 'D', STA: 0+50-END

T:\Private\Maxor\Crescent Belterra\Design\PH 1 SEC 20\Shts Construction\S-CRESBELTRA_PH1_SEC20-SSP-MAIN B.dwg

Conveyance from Splitter Channel to Sedimentation Basin (POND 1)							Elev. (ft)	1203.50	1203.60	1203.70	1203.80	1203.90	1204.00	1204.10	1204.20	1204.30	1204.40	1204.50	1204.60	1204.70	1204.80	1204.90	1205.00
Q25 (cfs)	Name	Slope	Length (ft)	Weir Crest Elev. (ft)	n	Manning's Equation	Q (cfs)	1.47	2.47	3.60	4.84	6.16	7.55	9.00	10.49	12.03	13.59	15.19	16.82	18.47	20.13	21.82	23.52
23.21	WQ SED	0.02	2.4	1203.25	0.03	$Q=(1.49/n)AR^{2/3}S^{1/2}$																	

Broad Crested Weir from Splitter Channel to Bypass Channel (POND 1)						Elev. (ft)	1205.00	1205.10	1205.20	1205.30	1205.40	1205.50	1205.60	1205.70	1205.80	1205.90	1206.00	
Q100 (cfs)	Weir #	Length (ft)	Weir Crest Elev. (ft)	C	Weir Equation	Q (cfs)	0.00	3.04	8.59	15.77	24.29	33.94	44.62	56.22	68.69	81.97	96.00	Velocity (fps)
32.75	BYPASS	32	1205	3	Q=CL(H)^1.5													2.12

POND 1 - SPLITTER CHANNELTO BYPASS			
WEIR LENGTH PROVIDED	=	32	FT
Q100	=	32.75	CFS
COEFFICIENT	=	3	UNITLESS
HEAD TO PASS 100 YEAR STORM	=	0.49	FT
HEAD PROVIDED	=	1.0	FT

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Belterra Sec 20-1 & 20-2**
Date Prepared: **6/2/2017**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348A (Appendix A - OEM) Pages 20 - 24

Page 3-29 Equation 3.3: $L_M = 27.7(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	91.45	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan * =	10.83	acres
Total post-development impervious cover fraction * =	0.12	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	9900	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 3

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = WQ POND 1

Total drainage basin/outfall area =	4.07	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	1.68	acres
Post-development impervious fraction within drainage basin/outfall area =	0.41	
$L_{M\ THIS\ BASIN}$ =	1535	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Sand Filter
Removal efficiency = 89 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	4.07	acres
A_I =	1.68	acres
A_P =	2.39	acres
L_R =	1745	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 1535 lbs.

F = 0.88

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.64	inches
Post Development Runoff Coefficient =	0.40	
On-site Water Quality Volume =	9711	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	1942	
Total Capture Volume (required water quality volume(s) x 1.20) =	11653	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	11653	cubic feet	
Minimum filter basin area =	540	square feet	
Maximum sedimentation basin area =	4856	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	1214	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	11653	cubic feet	
Minimum filter basin area =	971	square feet	
Maximum sedimentation basin area =	3884	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	243	square feet	For maximum water depth of 8 feet

Water Quality Stage-Storage Table - POND 1

Sedimentation Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1202.00	0	0	0
	1203.00	2,348	1,174	1,174
	1204.00	2,849	2,599	3,773
WQ ELEV:	**1205.00**	**3,381**	**3,115**	**6,888**
	1206.00	3,944	3,663	10,550

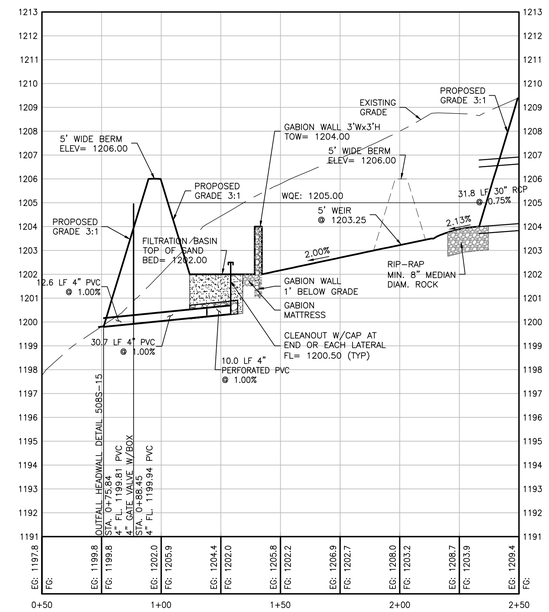
Filtration Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1202.00	1,107	0	0
	1203.00	1,442	1,275	1,275
	1204.00	1,809	1,626	2,900
WQ ELEV:	**1205.00**	**2,206**	**2,008**	**4,908**
	1206.00	2,634	2,420	7,328

Total Water Quality:

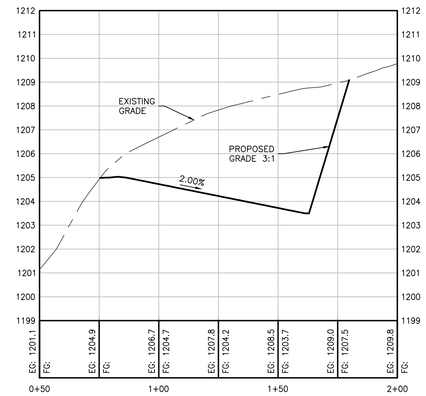
	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1202.00	1,107	0	0
	1203.00	3,790	2,449	2,449
	1204.00	4,658	4,224	6,673
WQ ELEV:	**1205.00**	**5,587**	**5,123**	**11,795**
	1206.00	6,578	6,083	17,878

Level Spreader Design - Pond 1		
Design Criteria:		
ECM 1.4.6, Permanent Structural Practices, (C) Level Spreader, (4) Design Criteria		
Q100YR Outfall (cfs) =	25.10	REF: Drainage Area Calculations
Level Spreader Length, L (ft) =	29	REF: ECM 1.4.6.C.4
V (ft/s) =	2	REF: Non-erosive velocity
C =	3	REF: Weir Coefficient
A (sf) =	12.55	REF: Q = VA, A = Q/V
H (ft) =	0.43	REF: A=LH, H = A/L
Q Spreader (cfs) =	24.77	REF: Broad Crested Weir Equation, Q = CLH^3/2



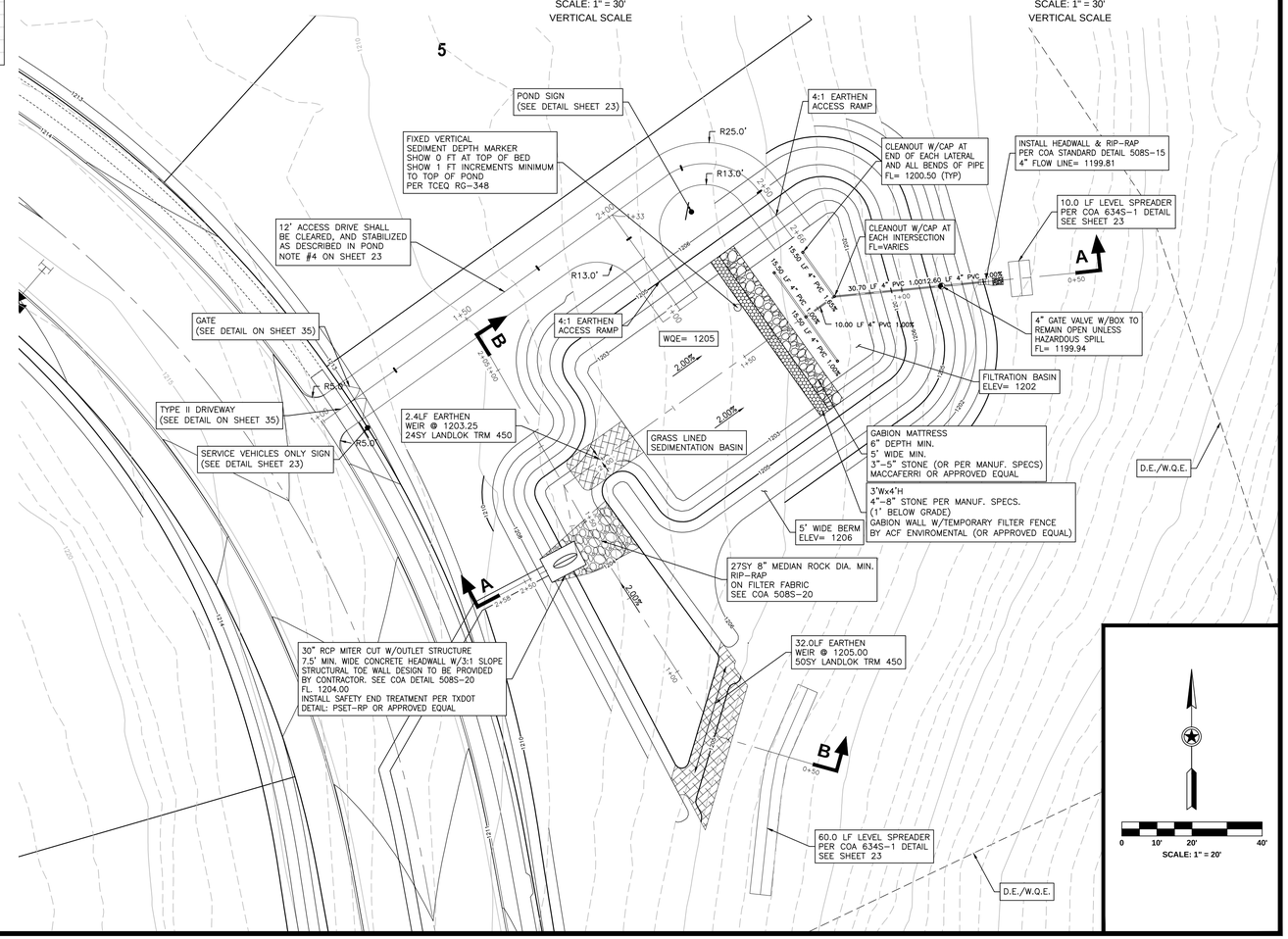
SECTION A-A

SCALE: 1" = 30'
VERTICAL SCALE



SECTION B-B

SCALE: 1" = 30'
VERTICAL SCALE



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
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469-513-5601

CONSULTANTS:

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11209 CHERISSE DRIVE
AUSTIN, TX 78739
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PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 21, 2015
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: POND 1

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Conveyance from Splitter Channel to Sedimentation Basin (POND 2)							Elev. (ft)	1201.25	1201.50	1201.75	1202.00	1202.25	1202.50	1202.75	1203.00	1203.25	1203.50	1203.75	1204.00	1204.25	1204.50	1204.75	1205.00
Q25 (cfs)	Name	Slope	Bottom Width (ft)	Weir Crest Elev. (ft)	n	Manning's Equation	Q (cfs)	0.00	1.07	2.97	5.23	7.68	10.26	12.92	15.64	18.40	21.19	24.00	26.84	29.68	32.54	35.41	38.29
26.42	WQ SED	0.02	1.8	1201.25	0.03	$Q=(1.49/n)AR^{2/3}S^{1/2}$																	

Broad Crested Weir from Splitter Channel to Bypass Channel (POND 2)							Elev. (ft)	1204.00	1204.10	1204.20	1204.30	1204.40	1204.50	1204.60	1204.70	1204.80	1204.90	1205.00
Q100 (cfs)	Weir #	Length (ft)	Weir Crest Elev. (ft)	C	Weir Equation	Q (cfs)	0.00	3.32	9.39	17.25	26.56	37.12	48.80	61.49	75.13	89.65	105.00
37.09	BYPASS	35	1204	3	Q=CL(H)^1.5												

POND 2 - SPLITTER CHANNELTO BYPASS			
WEIR LENGTH PROVIDED	=	35.00	FT
Q100	=	37.09	CFS
COEFFICIENT	=	3	UNITLESS
HEAD TO PASS 100 YEAR STORM	=	0.50	FT
HEAD PROVIDED	=	1.0	FT

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: **Belterra Sec 20-1 & 20-2**

Date Prepared: **6/2/2017**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 (Appendix A - OEM) Pages 20 - 24

Page 3-29 Equation 3.3: $L_M = 27.7(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	91.45	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	10.83	acres
Total post-development impervious cover fraction * =	0.12	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	9900	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 3

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = WQ POND 2

Total drainage basin/outfall area =	4.32	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	2.14	acres
Post-development impervious fraction within drainage basin/outfall area =	0.50	
$L_{M\ THIS\ BASIN}$ =	1959	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Sand Filter
Removal efficiency = 89 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	4.32	acres
A_I =	2.14	acres
A_P =	2.18	acres
L_R =	2212	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 1959 lbs.

F = 0.89

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.73	inches
Post Development Runoff Coefficient =	0.47	
On-site Water Quality Volume =	12796	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	2559	
Total Capture Volume (required water quality volume(s) x 1.20) =	15356	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	15356	cubic feet	
Minimum filter basin area =	711	square feet	
Maximum sedimentation basin area =	6398	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	1600	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	15356	cubic feet	
Minimum filter basin area =	1280	square feet	
Maximum sedimentation basin area =	5119	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	320	square feet	For maximum water depth of 8 feet

Water Quality Stage-Storage Table - POND 2

Sedimentation Pond:

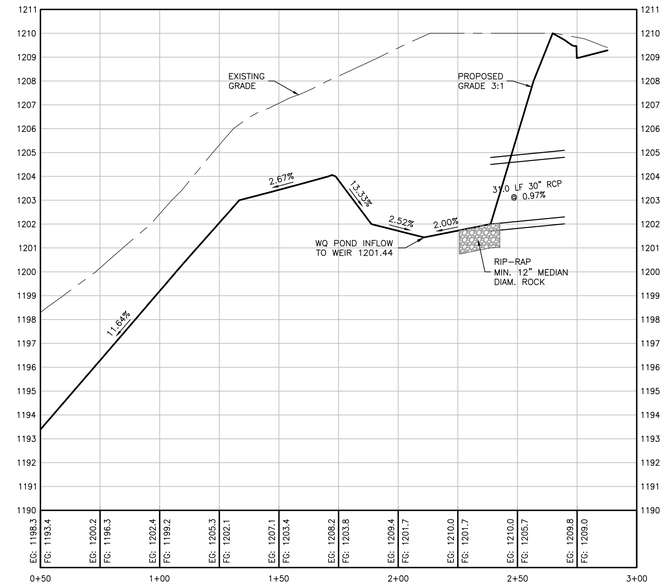
	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1200.00	0	0	0
	1201.00	2,672	1,336	1,336
	1202.00	3,151	2,912	4,248
	1203.00	3,667	3,409	7,657
WQ ELEV:	**1204.00**	**4,218**	**3,943**	**11,599**
	1205.00	4,804	4,511	16,110

Filtration Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1200.00	1,319	0	0
	1201.00	1,640	1,480	1,480
	1202.00	1,989	1,814	3,294
	1203.00	2,366	2,177	5,471
WQ ELEV:	**1204.00**	**2,772**	**2,569**	**8,040**
	1205.00	3,207	2,989	11,029

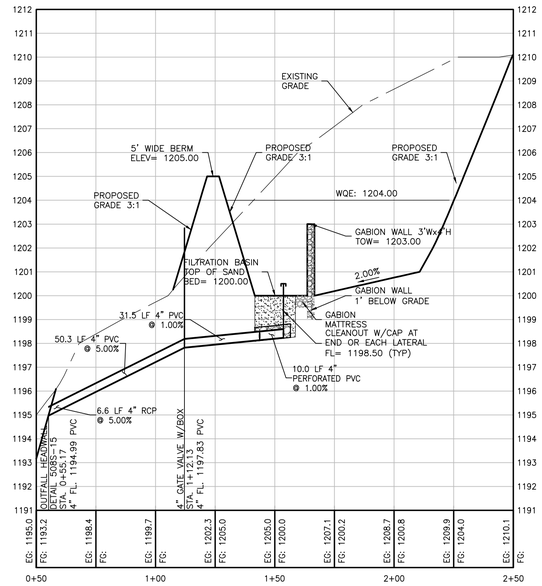
Total Water Quality:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1200.00	1,319	0	0
	1201.00	4,312	2,816	2,816
	1202.00	5,140	4,726	7,541
	1203.00	6,033	5,586	13,128
WQ ELEV:	**1204.00**	**6,990**	**6,511**	**19,639**
	1205.00	8,011	7,500	27,139



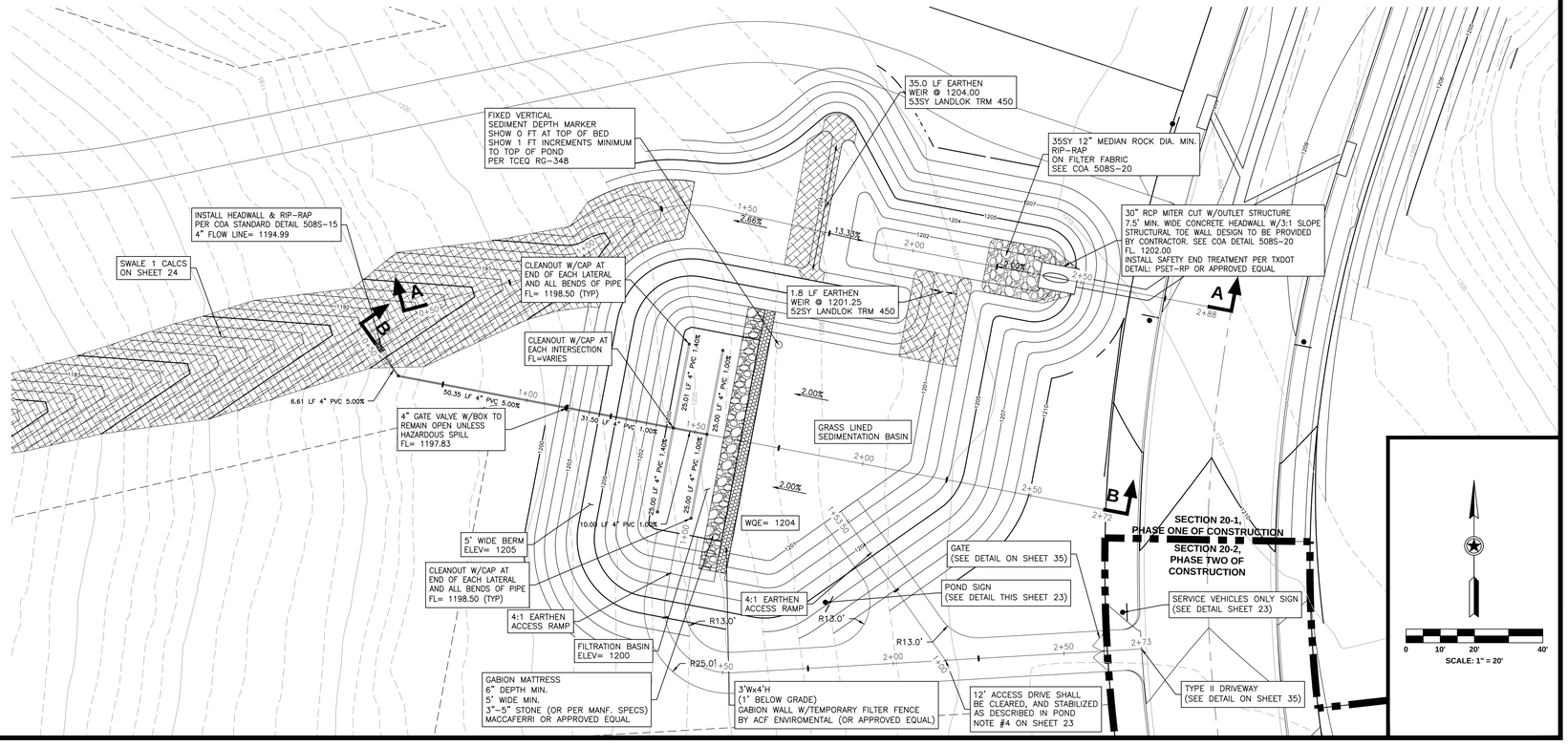
SECTION A-A

SCALE: 1" = 30'
VERTICAL SCALE



SECTION B-B

SCALE: 1" = 30'
VERTICAL SCALE



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

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Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

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IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

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TECHNOLOGIES, LLC
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AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION

EDITED: May 11, 2017
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: POND 2

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Broad Crested Weir from Splitter Box to Bypass Channel (POND 3)

Q100 (cfs)	Weir #	Opening Length on 1 Side of 4 Sided Inlet (ft)	Weir Crest Elev. (ft)	C	Weir Equation	Q (cfs)	0.00	1.90	5.37	7.50	9.86	15.18	21.21	27.89	35.14	42.93	51.23	60.00
						Elev. (ft)	1212.00	1212.10	1212.20	1212.25	1212.30	1212.40	1212.50	1212.60	1212.70	1212.80	1212.90	1213.00
16.60	BYPASS	5.0	1212	3	Q=CL(H)^1.5													

*A 5'x5' table top, area inlet is required to pass the 100 YR storm.

POND 3 - SPLITTER TO BYPASS			
WEIR LENGTH PROVIDED	=	20.0	FT
Q100	=	16.60	CFS
COEFFICIENT	=	3	UNITLESS
HEAD TO PASS 100 YEAR STORM	=	0.42	FT
HEAD PROVIDED	=	0.50	FT

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Belterra Sec 20-1 & 20-2
Date Prepared: 6/2/2017

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 (Appendix A - OEM) Pages 20 - 24

Page 3-29 Equation 3.3: $L_M = 27.7(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	91.45	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	10.83	acres
Total post-development impervious cover fraction * =	0.12	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	9900	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 3

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = WQ POND 3

Total drainage basin/outfall area =	2.17	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.82	acres
Post-development impervious fraction within drainage basin/outfall area =	0.38	
$L_{M\ THIS\ BASIN}$ =	747	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Sand Filter
Removal efficiency = 89 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	2.17	acres
A_I =	0.82	acres
A_P =	1.35	acres
L_R =	852	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 747 lbs.

F = 0.88

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.64	inches
Post Development Runoff Coefficient =	0.37	
On-site Water Quality Volume =	4783	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	957	
Total Capture Volume (required water quality volume(s) x 1.20) =	5740	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	5740	cubic feet	
Minimum filter basin area =	266	square feet	
Maximum sedimentation basin area =	2391	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	598	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	5740	cubic feet	
Minimum filter basin area =	478	square feet	
Maximum sedimentation basin area =	1913	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	120	square feet	For maximum water depth of 8 feet

Water Quality Stage-Storage Table - POND 3

Sedimentation Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1208.00	0	0	0
	1209.00	388	194	194
	1210.00	596	492	686
	1211.00	836	716	1,402
WQ ELEV:	**1212.00**	**1,106**	**971**	**2,373**
	1213.00	1,408	1,257	3,630

Filtration Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1208.00	500	0	0
	1209.00	837	669	669
	1210.00	1,206	1,022	1,690
	1211.00	1,606	1,406	3,096
WQ ELEV:	**1212.00**	**2,038**	**1,822**	**4,918**
	1213.00	2,501	2,270	7,188

Total Water Quality:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1208.00	500	0	0
	1209.00	1,225	863	863
	1210.00	1,802	1,514	2,376
	1211.00	2,442	2,122	4,498
WQ ELEV:	**1212.00**	**3,144**	**2,793**	**7,291**
	1213.00	3,909	3,527	10,818

Level Spreader Design - Pond 3

Design Criteria:
ECM 1.4.6, Permanent Structural Practices, (C) Level Spreader, (4) Design Criteria

Q100YR Outfall (cfs) =	14.25	REF: Drainage Area Calculations
Level Spreader Length, L (ft) =	16	REF: ECM 1.4.6.C.4
V (ft/s) =	2	REF: Non-erosive velocity
C =	3	REF: Weir Coefficient
A (sf) =	7.13	REF: Q = VA, A = Q/V
H (ft) =	0.45	REF: A=LH, H = A/L
Q Spreader (cfs) =	14.26	REF: Broad Crested Weir Equation, Q = CLH^3/2

*NOTE: COA ECM 1.4.6 REQUIRES LEVEL SPREADER TO BE DESIGNED FOR Q25. THIS SPREADER HAS BEEN DESIGNED FOR Q100 TO BE MORE CONSERVATIVE.

BYPASS POND 3 SWALE

Known:

Q100 =	16.60 cfs	**V100**	3.07 ft/s^2	**D**	0.68 ft		
Slope =	0.02						
Bottom Width =	6 feet						
Manning's Number =	0.045						

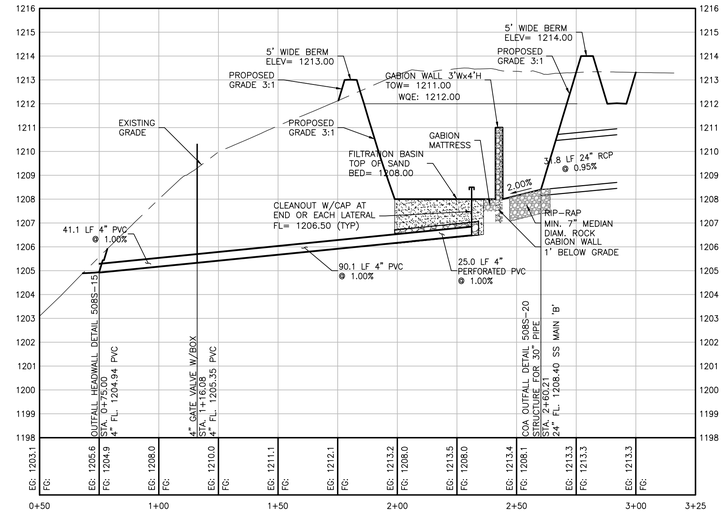
Calculations (3:1 slope):

Depth (ft)	A (ft^2)	P (ft)	R (ft)	S	Q (cfs)	v (ft/s)	Fr #	Top Width
0.68	5.47	10.30	0.53	0.02	16.79	3.07	0.57	10.08

100 YR Velocity Head (V^2/2g)	0.15 ft
Depth Required	0.83 ft
Min. Depth Provided	1.00 ft

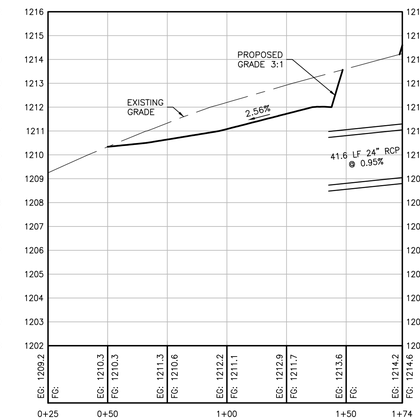
BYPASS POND 3 SWALE

	100-YR
Q (cfs)	16.60
V (ft/s)	3.07
D (ft)	0.68
$V^2/2g$ (ft)	0.15



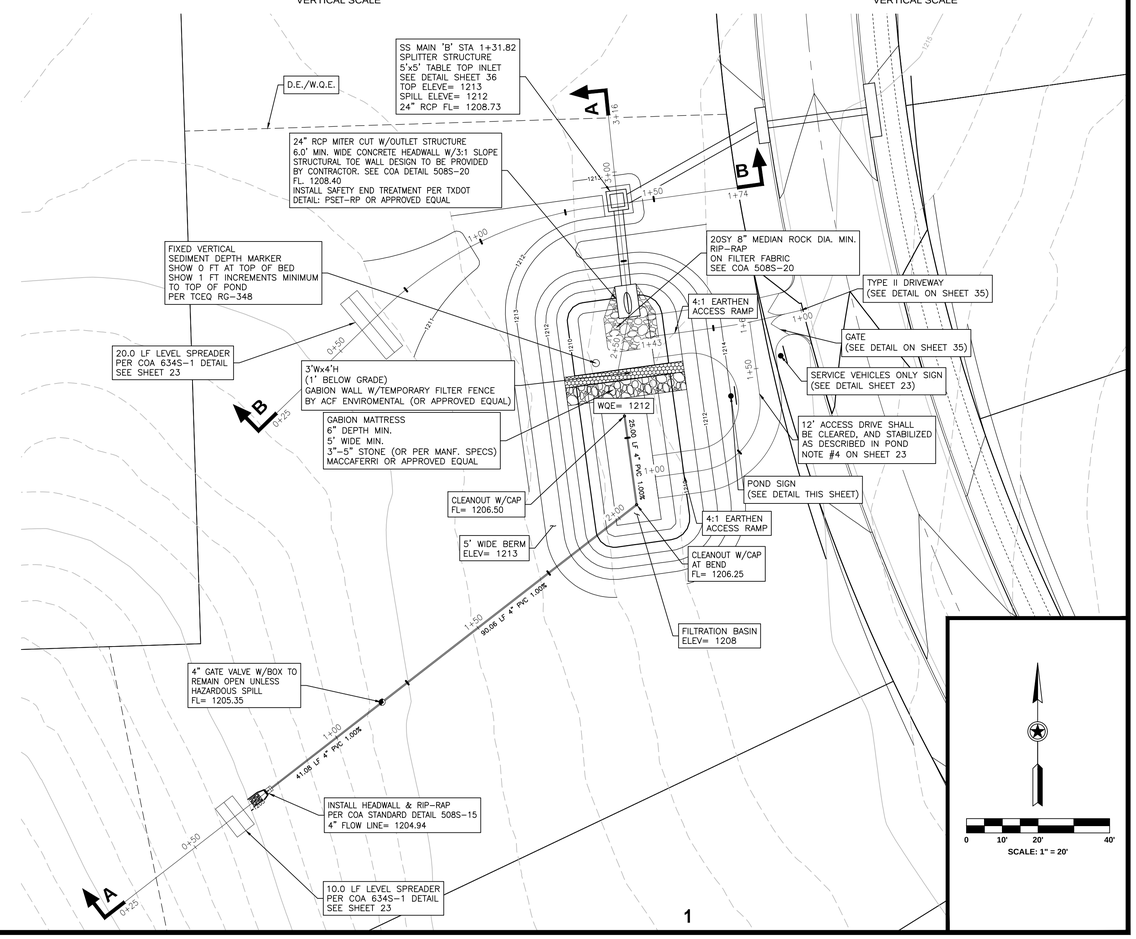
SECTION A-A

SCALE: 1" = 30'
VERTICAL SCALE



SECTION B-B

SCALE: 1" = 30'
VERTICAL SCALE



STATE OF TEXAS
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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

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REVISIONS

NO	DATE - DESCRIPTION

EDITED: May 11, 2017
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: POND 3

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Conveyance from Splitter Channel to Sedimentation Basin (POND 4)							Elev. (ft)	1141.3	1141.4	1141.5	1141.6	1141.7	1141.8	1141.9	1142.0	1142.1	1142.2	1142.3	1142.4	1142.5	1142.6	1142.7	1142.8	1142.9	1143.0
Q25 (cfs)	Name	Slope	Length (ft)	Weir Crest Elev. (ft)	n	Manning's Equation	Q (cfs)	0.00	0.89	2.76	5.32	8.42	11.98	15.93	20.22	24.82	29.68	34.79	40.11	45.63	51.33	57.20	63.22	69.37	75.65
68.08	WQ SED	0.02	6	1141.3	0.03	$Q=(1.49/n)AR^{2/3}S^{1/2}$																			

Broad Crested Weir from Splitter Channel to Bypass Channel (POND 4)							Elev. (ft)	1143.00	1143.10	1143.20	1143.30	1143.40	1143.50	1143.60	1143.70	1143.80	1143.90	1144.00	1144.10	1144.20	1144.30	1144.40	1144.50	1144.60	1144.70	1144.80	1144.90	1145.00
Q100 (cfs)	Weir #	Length (ft)	Weir Crest Elev. (ft)	C	Weir Equation	Q (cfs)	0.00	1.90	5.37	9.86	15.18	21.21	27.89	35.14	42.93	51.23	60.00	69.22	78.87	88.93	99.39	110.23	121.43	132.99	144.90	157.14	169.71
99.19	BYPASS	20	1143	3	Q=CL(H)^1.5																						

POND 4 - SPLITTER CHANNELTO BYPASS			
WEIR LENGTH PROVIDED	=	20.00	FT
Q100	=	99.19	CFS
COEFFICIENT	=	3	UNITLESS
HEAD TO PASS 100 YEAR STORM	=	1.40	FT
HEAD PROVIDED	=	2.0	FT

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Belterra Sec 20-1 & 20-2
Date Prepared: 6/2/2017

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348A (Appendix A - OEM) Pages 20 - 24

Page 3-29 Equation 3.3: $L_M = 27.7(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	91.45	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan * =	10.83	acres
Total post-development impervious cover fraction * =	0.12	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	9900	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 6

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = WQ POND 4 (OFFSITE)

Total drainage basin/outfall area =	22.55	acres	
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres	
Post-development impervious area within drainage basin/outfall area =	3.98	acres	*Includes 2.55 AC of offsite IC from Belterra Dr
Post-development impervious fraction within drainage basin/outfall area =	0.18		
$L_{M\ THIS\ BASIN}$ =	3640	lbs.	

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Sand Filter
Removal efficiency = 89 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	22.55	acres
A_I =	3.98	acres
A_P =	18.56	acres
L_R =	4341	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 3640 lbs.

F = 0.84

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.28	inches
Post Development Runoff Coefficient =	0.20	
On-site Water Quality Volume =	20964	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	4193	
Total Capture Volume (required water quality volume(s) x 1.20) =	**25157**	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin =	NA	cubic feet	
Irrigation Area Calculations:			
Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	25157	cubic feet	
Minimum filter basin area =	1165	square feet	
Maximum sedimentation basin area =	10482	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	2621	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	25157	cubic feet	
Minimum filter basin area =	2096	square feet	
Maximum sedimentation basin area =	8386	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	524	square feet	For maximum water depth of 8 feet

Water Quality Stage-Storage Table - POND 4

Sedimentation Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1139.50	0	0	0
	1140.00	2,223	556	556
	1141.00	4,118	3,171	3,726
	1142.00	4,845	4,482	8,208
WQ ELEV:	**1143.00**	**5,606**	**5,226**	**13,433**
	1144.00	6,400	6,003	19,436
	1145.00	7,230	6,815	26,251

Filtration Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1139.50	2,427	0	0
	1140.00	2,699	1,282	1,282
	1141.00	3,268	2,984	4,265
	1142.00	3,871	3,570	7,835
WQ ELEV:	**1143.00**	**4,509**	**4,190**	**12,025**
	1144.00	5,181	4,845	16,870
	1145.00	5,887	5,534	22,404

Total Water Quality:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1139.50	2,427	0	0
	1140.00	4,922	1,837	1,837
	1141.00	7,386	6,154	7,991
	1142.00	8,716	8,051	16,042
WQ ELEV:	**1143.00**	**10,115**	**9,416**	**25,458**
	1144.00	11,581	10,848	36,306
	1145.00	13,117	12,349	48,655

Level Spreader Design - Pond 4

Design Criteria:
ECM 1.4.6, Permanent Structural Practices, (C) Level Spreader, (4) Design Criteria

Q100YR Outfall (cfs) =	99.19	REF: Drainage Area Calculations
Level Spreader Length, L (ft) =	112	REF: ECM 1.4.6.C.4
V (ft/s) =	2	REF: Non-erosive velocity
C =	3	REF: Weir Coefficient
A (sf) =	49.60	REF: Q = VA, A = Q/V
H (ft) =	0.44	REF: A=LH, H = A/L
Q Spreader (cfs) =	99.01	REF: Broad Crested Weir Equation, Q = CLH^3/2

*NOTE: COA ECM 1.4.6 REQUIRES LEVEL SPREADER TO BE DESIGNED FOR Q25. THIS SPREADER HAS BEEN DESIGNED FOR Q100 TO BE MORE CONSERVATIVE.

BYPASS POND 4 SWALE

Known:

Q100 =	99.10 cfs	V100	3.83 ft/s^2	D	0.80 ft
Slope =	0.02				
Bottom Width =	30 feet				
Manning's Number =	0.045				

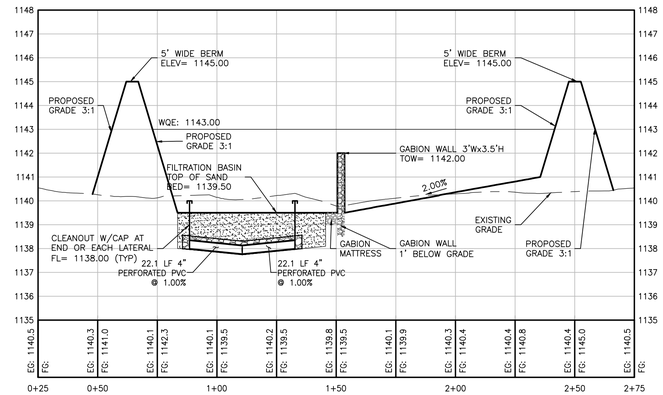
Calculations (3:1 slope):

Depth (ft)	A (ft^2)	P (ft)	R (ft)	S	Q (cfs)	v (ft/s)	Fr #	Top Width
0.80	25.92	35.06	0.74	0.02	99.24	3.83	0.75	34.60

100 YR Velocity Head (V^2/2g)	0.23 ft
Depth Required	1.03 ft
Min. Depth Provided	1.50 ft

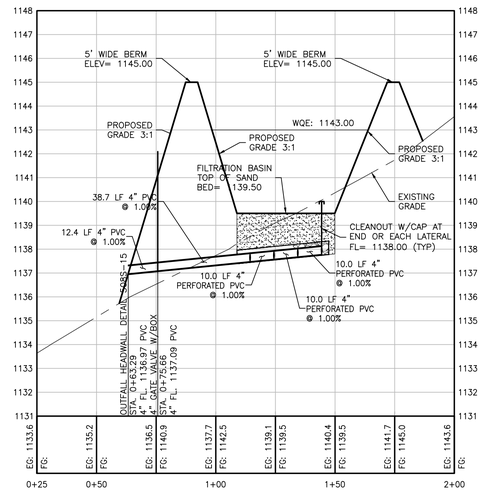
BYPASS POND 4 SWALE

	100-YR
Q (cfs)	99.19
V (ft/s)	3.83
D (ft)	0.80
$V^2/2g$ (ft)	0.23



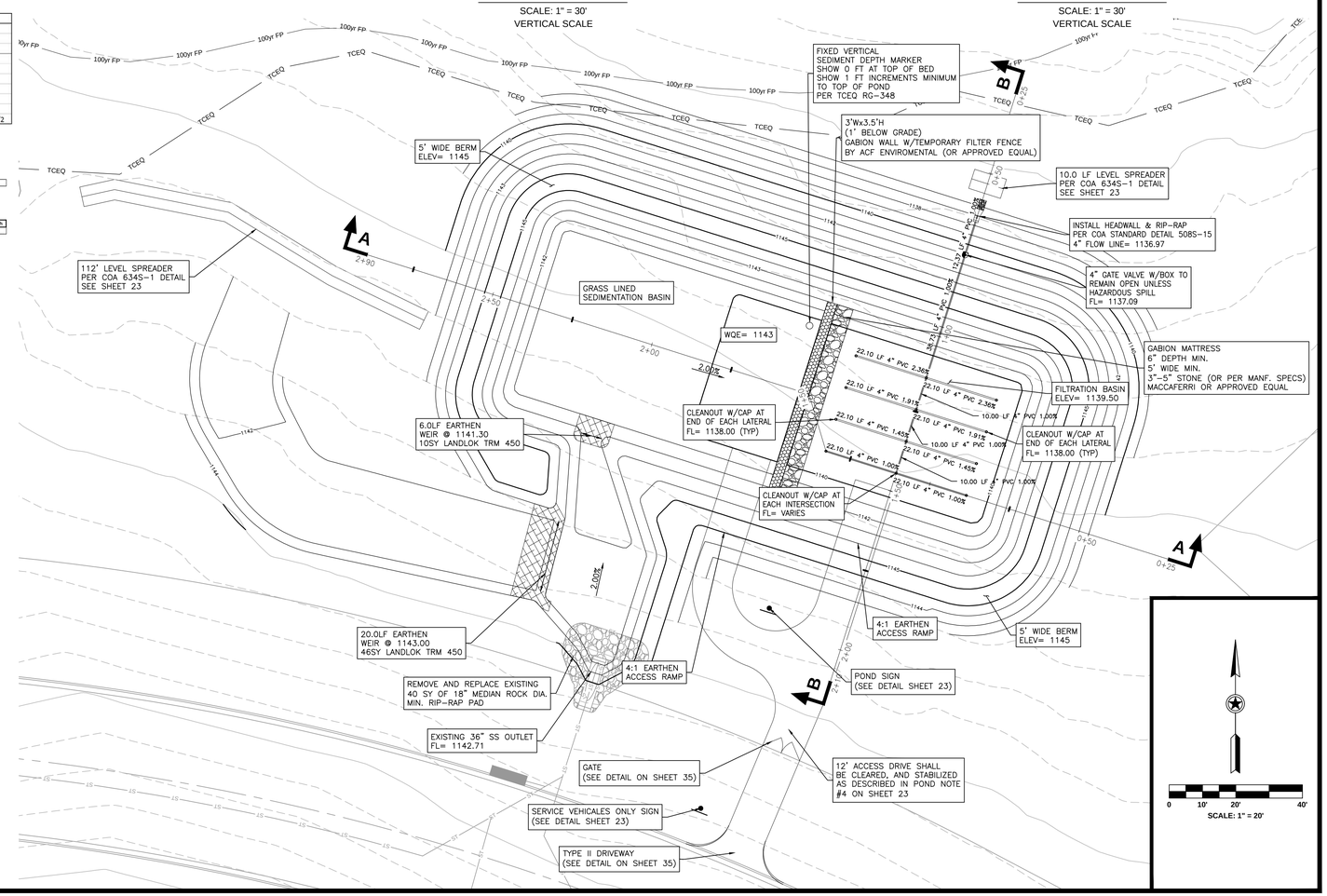
SECTION A-A

SCALE: 1" = 30'
VERTICAL SCALE



SECTION B-B

SCALE: 1" = 30'
VERTICAL SCALE



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
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Austin, Texas 78704
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F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

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469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
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PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION

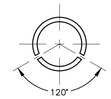
EDITED: May 11, 2017
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: POND 4

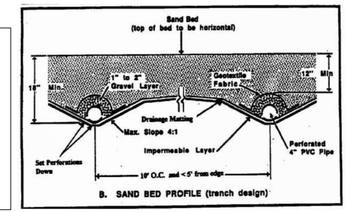
T:\Private\Makon\Crescent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-PND-4.dwg

PERFORATED 4", SCHD 40 PVC PIPE WRAPPED IN GEOTEXTILE FABRIC. PERFORARTIONS SHALL BE 3/8"ø AND SHALL NOT BE SPACED MORE THAN 6" APART.



PIPE PERFORATION DETAIL

NTS

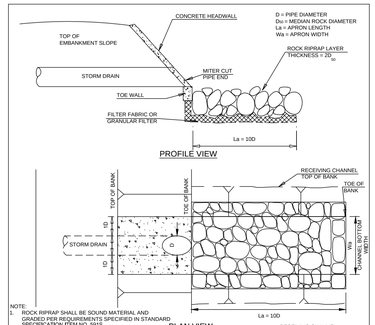


B. SAND BED PROFILE (trench design)

FIGURE 3-23 REF: RG-348 (FILTRATION POND BEDDING DETAIL)

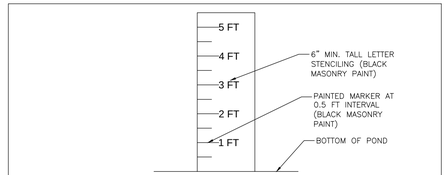
POND NOTES

1. POND SHALL BE MAINTAINED ACCORDING TO MAINTENANCE AGREEMENT ON RECORD AT TCEQ.
2. ALL POND BOTTOMS, SIDE SLOPES, AND EARTHEN EMBANKMENTS SHALL BE COMPACTED TO NINETY–FIVE (95) PERCENT MAXIMUM DENSITY, IN ACCORDANCE WITH TCEQ RG–348, 3–37. EXCAVATION AND EMBANKMENT SHALL BE IN COMPLIANCE WITH GEOTECHNICAL RECOMMENDATIONS. IF NOT SPECIFICALLY ADDRESSED IN GEOTECHNICAL REPORT, REFERENCE CITY OF AUSTIN SPECIFICATIONS.
3. MAINTENANCE EQUIPMENT ACCESS RAMP SHALL BE 12 FEET WIDE, NOT EXCEEDING 4H:1V.
4. ACCESS DRIVE SHALL BE A MINIMUM OF 12 FEET WIDE AND NOT EXCEED 15% GRADE. ACCESS DRIVE SHALL BE CLEARED, GRADED AND STABILIZED. (RG–348, 3–38) ACCESS DRIVE SHALL BE STABILIZED WITH 8–INCH ROAD BASE ON PREPARED SUBGRADE, REFER TO GEOTECHNICAL REPORT FOR CONSTRUCTION CONSIDERATIONS FOR SUBGRADE PREPARATION AND BASE COURSE FOR LOCAL STREET SPECIFICATION (8–INCH BASE).
5. BASIN LINING REQUIREMENTS: IMPERMEABLE LINERS ARE NOT REQUIRED OVER THE EDWARDS AQUIFER CONTRIBUTING ZONE. HOWEVER AN IMPERMEABLE LINER SHALL BE USED IF THE PRESENCE OF GROUNDWATER IS DISCOVERED. IMPERMEABLE LINERS MAY BE CLAY, CONCRETE OR GEOMEMBRANE. IF GEOMEMBRANE IS USED, SUITABLE GEOTEXTILE FABRIC (SEE RG–348 TABLE 3–7 PG 3–39) SHOULD BE PLACED ON THE TOP AND BOTTOM OF THE MEMBRANE FOR PUNCTURE PROTECTION AND THE LINERS COVERED WITH A MINIMUM OF 6 INCHES OF COMPACTED TOPSOIL. THE TOPSOIL SHOULD BE STABILIZED WITH APPROPRIATE VEGETATION. GEOMEMBRANE LINERS SHOULD HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT. CLAY LINERS SHOULD HAVE A MINIMUM THICKNESS OF 12 INCHES AND SHOULD MEET THE SPECIFICATIONS IN TABLE 3–6 OF TCEQ RG–348 PG 3–38. INSTALLATION METHODS VARY ACCORDING TO SITE REQUIREMENTS.
6. SAND AND GRAVEL CONFIGURATION: A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN THE SEDIMENTATION BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 20% OF THE WATER QUALITY VOLUME AND SEDIMENT REMOVAL IS REQUIRED.
7. THE TRENCH DESIGN SAND FILTER IS CONSTRUCTED WITH 12 INCHES OF SAND OVERLYING 1–2 INCHES OF GRAVEL. TO PREVENT MIGRATION OF FINE MATERIAL, THE SAND AND GRAVEL MEDIA ARE SEPARATED BY PERMEABLE GEOTEXTILE FABRIC (SEE PLANS FOR SPECIFICATIONS). GEOTEXTILE FABRIC SHALL OVERLAP A MINIMUM OF 18 INCHES. FOUR–INCH PERFORATED PVC PIPE IS USED TO DRAIN CAPTURED FLOWS FROM THE GRAVEL LAYER. A MINIMUM OF 2 INCHES OF GRAVEL MUST COVER THE TOP SURFACE OF THE PVC PIPE. FIGURE 3–23 PRESENTS A SCHEMATIC REPRESENTATION OF A STANDARD SAND BED PROFILE.
8. SAND PROPERTIES: THE SAND GRAIN SIZE DISTRIBUTION SHOULD BE COMPARABLE TO THAT OF "WASHED CONCRETE SAND" (i.e., ASTM C–33 FINE AGGREGATE).
9. UNDERDRAIN PIPE CONFIGURATION: FILTRATION POND UNDERDRAIN TO CONSIST OF A MIN. OF 4" DIAMETER PERFORATED PVC PIPE AT A MIN. 1.0% GRADE WITH SCREW–ON CLEANOUTS AS SHOWN. UNDERDRAINS SHOULD BE PERFORATED WITH 1/4–1/2 INCH OPENINGS, MAXIMUM SPACING BETWEEN ROWS SHALL BE 6 INCHES CENTER TO CENTER. ALL PVC IS TO BE SCHEDULE 40 PVC. THE MAXIMUM SPACING FOR FILTRATION POND LATERALS SHOULD BE TEN (10) FEET BETWEEN LATERALS AND FIVE (5) FEET FROM A WALL OR SIDE.
10. SAND FILTER DISCHARGE: A VALVE MUST BE INSTALLED SO THAT DISCHARGE FROM THE BMP CAN BE STOPPED IN CASE RUNOFF FROM THE SPILL OF HAZARDOUS MATERIAL ENTERS THE SAND FILTER. THE CONTROL FOR THE VALVE MUST BE ACCESSIBLE AT ALL TIMES, INCLUDING WHEN THE BASIN IS FULL.
11. SAFETY IS PROVIDED BY MANAGING THE CONTOURS OF THE POND TO ELIMINATE DROPOFFS OR OTHER HAZARDS. EARTHEN SIDE SLOPES SHOULD NOT EXCEED 3:1 (H:V) AND SHOULD TERMINATE ON A FLAT SAFETY BENCH AREA.



NOTE:
1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 5915.
2. ROCK SIZE (D_{50}) AND GRADATION SHALL BE STABLE FOR THE DESIGN HYDRAULIC CONDITIONS AND IN ACCORDANCE WITH THE ECM 1.4.6.D PERMANENT STRUCTURAL PRACTICES, STONE RIPRAP OR OTHER ENGINEERING STANDARD OF PRACTICE FOR SIZING ROCK RIPRAP. ROCK RIPRAP D_{50} AND FILTER TYPE SHALL BE NOTED ON PLANS.
3. GEOTEXTILE FILTER FABRIC SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 6205.
4. AGGREGATE FOR GRANULAR FILTER SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 403, AGGREGATE SIZE CLASSIFICATIONGRADE, NUMBER OF LAYERS AND LAYER THICKNESS SHOULD BE NOTED ON THE PLANS.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STORMDRAIN OUTFALL PROTECTION CULVERT UNDER ROADWAY/INLINE	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-20



USA BLUEBOOK PRODUCT: PORCELAIN ENAMELED IRON STAFF GAUGE, STYLE E, OR APPROVED EQUAL. CONTRACTOR TO PROVIDE SUBMITTAL TO DISTRICT OPERATOR. FASTEN TO PEIR (MINIMUM 4" SCHD 409 GALVANIZED STEEL PIPE SET IN CLASS 'D' CONCRETE).

SEDIMENT DEPTH MARKER DETAIL

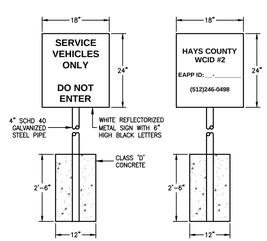
NOT TO SCALE

DETENTION OUTFALL NOTES

1. CONCRETE SHALL BE CLASS A, 4–INCH MINIMUM THICKNESS.
2. SUBGRADE SHALL BE MINIMUM 2–INCH SAND CUSHION.
3. REINFORCEMENT SHALL BE POLYPROPYLENE FIBRILATED FIBERS, OR 150 MM X 150 MM XMW9 XMW9 (6" X 6" X W1.4 XW1.4) WELDED WIRE FABRIC OR ONE LAYER 10M (#3) BARS PLACED NOT MORE THAN 450 mm (18") C.C. BOTH DIRECTIONS. REINFORCEMENT SHALL ACCURATELY PLACED AT SLAB MID–DEPTH AND HELD FIRMLY IN PLACE BY MEANS OF BAR SUPPORTS OF ADEQUATE STRENGTH AND NUMBER THAT WILL PREVENT DISPLACEMENT AND KEEP THE STEEL AT ITS PROPER POSITION DURING THE PLACEMENT OF THE P.C. CONCRETE. IN NO INSTANCE SHALL THE STEEL BE PLACED DIRECTLY ON THE SUBGRADE OR SAND CUSHION LAYER.
4. CONTROL JOINTS SHALL BE PLACED EVERY 5 FEET. EXPANSION JOINTS SHALL BE PLACED EVERY 40 FEET.
5. TOE WALL REQUIRED AT TOE OF SLOPE, 6–INCH X 6–INCH MINIMUM REINFORCED.
6. REFERENCE COA DETAIL 430S–1 AND 430S–3, OR APPROVED EQUAL, FOR 6–INCH CONCRETE SPILL CURB.
7. CONCRETE EMBANKMENT SHALL INCLUDE WEIR STRUCTURE IN COMPLIANCE WITH THE DETAILS PROVIDED.

GABION WALL NOTES

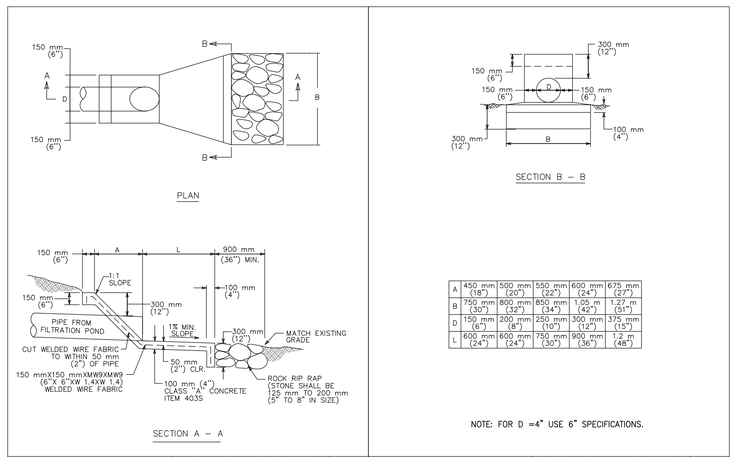
1. STONE: STONE FILL MATERIAL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE OF THE SIZE INDICATED. 4 TO 8 INCHES IN SIZE OR PER MANUFACTURER SPECS. AS APPROVED BY THE ENGINEER AND RESISTANT TO THE ACTION OF AIR AND WATER AND SUITABLE IN ALL RESPECTS FOR THE PURPOSE INTENDED.
2. WIRE CONTAINERS: WIRE MESH SHALL CONSIST OF PLASTIC COATED (PVC) GALVANIZED WIRE 0.120 INCH IN DIAMETER MINIMUM AND SHALL EQUAL OR EXCEED FEDERAL SPECIFICATION QQ–W–461g CLASS 3 UNLESS OTHERWISE INDICATED. OPENING OF THE MESH SHALL NOT EXCEED APPROXIMATELY 3.25 INCHES IN THE LARGEST DIMENSION. THE WIRE MESH IS TO BE FABRICATED IN SUCH A MANNER AS TO BE NONRAVELING. TIE AND CONNECTING WIRE SHALL BE OF THE SAME TYPE AND SIZE AS THE BASKETS AND SHALL BE SUPPLIED IN SUFFICIENT QUANITITY FOR SECURELY FASTENING ALL EDGES OF THE GABION AND DIAPHGRAMS.
3. FILTER FABRIC: FILTER FABRIC SHALL BE NON–BIODEGRADABLE ULTRAVIOLET STABILIZED, INERT TO MOST SOIL CHEMICALS, UNAFFECTED BY MOISURE WHICH ALLOWS WATER TO PASS THROUGH WHILE RETAINING SOIL PARTICLES AND SHALL CONFORM TO ITEM NO. 620, "FILTER FABRIC".



ACCESS DETAIL **POND SIGN DETAIL**

NOTE: POND SIGN ABOVE REFLECTS SEVERN TRENT SERVICES CONTACT INFORMATION AS REQUESTED BY DISTRICT ENTINEER. DEVELOPER IS RESPONSIBLE FOR MAINTENANCE UNTIL EXPIRATION OF WARRANTY PERIOD.

GEOTEXTILE FABRIC SPECIFICATIONS			
PROPERTY	TEST METHOD	UNIT	UNIT
MATERIAL UNIT WEIGHT	NONWOVEN GEOTEXTILE FABRIC	OZ / SQ YD	8 (MIN)
FILTRATION RATE		IN / SEC	0.08 (MIN)
PUNCTURE STRENGTH	ASTM D–751 (MODIFIED)	LB	125 (MIN)
MULLEN BURST STRENGTH	ASTM D–751	PSI	400 (MIN)
TENSILE STRENGTH	ASTM D–1682	LB	200 (MIN)
EQUIVALENT OPENING SIZE	US STD SIEVE	NO	80 (MIN)



	1	2	3	4	5
A	450 mm (18")	500 mm (20")	550 mm (22")	600 mm (24")	675 mm (27")
B	750 mm (30")	800 mm (32")	850 mm (34")	1.05 m (42")	1.27 m (51")
D	150 mm (6")	200 mm (8")	250 mm (10")	300 mm (12")	375 mm (15")
L	600 mm (24")	600 mm (24")	750 mm (30")	900 mm (36")	1.2 m (48")

NOTE: FOR D =4" USE 6" SPECIFICATIONS.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	HEADWALL FOR FILTRATION PONDS W/OUTFALL PIPE 150 mm (6") TO 375 mm (15") DIA.	
RECORD COPY SIGNED BY GEORGE E. OSWALD 3/15/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–15 1 OF 2

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	HEADWALL FOR FILTRATION PONDS W/OUTFALL PIPE 150 mm (6") TO 375 mm (15") DIA.	
RECORD COPY SIGNED BY GEORGE E. OSWALD 3/15/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–15 2 OF 2

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

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Austin, Texas 78704
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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
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IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

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REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 21, 2015
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

POND NOTES AND DETAILS

T:\Private\Mesa\Crescent Belterra\Design\PH 1 SEC 20\Site Construction\5-CRESBELTRA_PH1_SEC20-PND.dwg

Detention Stage-Storage Table

Detention Pond:	Stage (ft msl)	Area (sf)	Area (ac)	Storage (cf)	Total Storage (cf)	Total Storage (ac)
	1168.00	0	0.000	0	0	0.000
	1169.00	2,803	0.064	1402	1,402	0.032
	1170.00	7,378	0.169	5091	6,492	0.149
	1171.00	11,280	0.259	9329	15,821	0.363
	1172.00	13,479	0.309	12380	28,201	0.647
WEIR ELEV:	**1173.00**	**15,803**	**0.363**	**14641**	**42,842**	**0.984**
	1174.00	18,497	0.425	17150	59,992	1.377

STORM EVENT	EX PT 1 Q (cfs)	DEV PT 1 w/o POND Q (cfs)	DEV PT 1 w/POND Q (cfs)	Q DEV - Q EX (cfs)	Target Outflow (cfs)	Estimated Storage (cf)	Provided Pond Outflow (cfs)	Pond Storage (cf)	Max WSE (ft)
2 YR	**205.56**	208.94	205.31	3.38	16.92	13,169	14.30	8817	1170.37
10 YR	**510.83**	521.25	508.65	10.42	34.61	35,397	31.55	25132	1171.82
25 YR	**694.88**	709.43	691.59	14.55	44.96	46,643	42.85	33971	1172.46
100 YR	**1,002.62**	1,024.38	998.13	21.76	61.77	68,178	59.83	48,763	1173.41

Detention Pond Outfall Structure*

Orifice(s)																							
	Diameter (ft)	**Area (ft^2)**	**Elev. pipe invert (ft)**	**C**																			
Orifice #																							
1 (21-inch RCP)	1.75	2.41	1168	0.6	Q=CA(2gH)^.5			0.00	4.09	12.28	14.25	16.88	20.08	20.47	22.14	23.52	24.93	26.22					
2 (30-inch RCP)	2.50	4.91	1170.25	0.6	Q=CA(2gH)^.5			0.00	0.00	0.00	0.00	0.00	14.57	16.71	23.99	28.95	33.51	37.37					
					Σ	(cfs)		0.00	4.09	12.28	14.25	16.88	34.65	37.19	46.13	52.47	58.44	63.59					
Broad Crested Weir(s)																							
			Weir Crest																				
Weir #	**Length (ft)**		**Elev. (ft)**				C																
1 (Concrete)	3.00		1173.00				3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.28	9.00					
					Σ	(cfs)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.28	9.00					
					Total Discharge	**(cfs)**		**0.00**	**4.09**	**12.28**	**14.25**	**16.88**	**34.65**	**37.19**	**46.13**	**52.47**	**61.72**	**72.59**					

	2-YR	10-YR	25-YR	100-YR
Elev. (ft)	1168.00 1169.00 1170.00 1170.39 1171.00 1171.88 1172.00	1172.53 1173.00	1173.51 1174.00	

*NOTE: THESE CALCULATIONS ARE SUPPLEMENTAL. PONDPACK OUTPUT FOR DETENTION OUTFALL STRUCTURE ANALYSIS VARIES SLIGHTLY FROM THESE SUPPLEMENTAL CALCULATIONS. DETENTION POND ANALYSIS TABLES ABOVE USE PONDPACK RESULTS.

BERM/SWALE CAPACITY
25 YR

Drainage Area	Swale	Q (25) (cfs)	Manning's n	Bottom Width (ft)	Left Slope X:1 (ft)	Right Slope X:1 (ft)	Depth (ft)	Channel Area (ft^2)	Min. Slope (ft/ft)	P allowable (ft)	R allowable (ft)	Q allowable (cfs)	Q (pass) (cfs)	V (ft/s)
BERM 3	BERM 3	11.35	0.045	0	3	10	1.5	14.63	0.020	19.82	0.74	55.77	0.00	2.55
BERM/SWALE 2	BERM/SWALE 2	3.99	0.045	3	3	3	1	6.00	0.050	9.32	0.64	33.02	0.00	2.99

BERM/SWALE CAPACITY
100 YR

Drainage Area	Swale	Q (100) (cfs)	Manning's n	Bottom Width (ft)	Left Slope X:1 (ft)	Right Slope X:1 (ft)	Depth (ft)	Channel Area (ft^2)	Min. Slope (ft/ft)	P allowable (ft)	R allowable (ft)	Q allowable (cfs)	Q (pass) (cfs)	V (ft/s)
BERM 3	BERM 3	16.64	0.045	0	3	10	1.5	14.6	0.020	19.82	0.74	55.77	0.00	2.80
BERM/SWALE 2	BERM/SWALE 2	5.81	0.045	3	3	3	1	6.0	0.050	9.32	0.64	33.02	0.00	3.33

SWALE 1A

Known:

Q100 =	40.84 **cfs**	**V100**	11.94 **ft/s^2**	**D**	0.68 **ft**	
Q25 =	26.66 **cfs**	**V25**	10.53 **ft/s^2**	**D**	0.54 **ft**	
Slope =	0.11					
Bottom Width =	3 **feet**					
Manning's Number =	0.025					

Calculations (3:1 slope):

Depth (ft)	A (ft^2)	P (ft)	R (ft)	S	Q (cfs)	v (ft/s)	Fr #	Top Width
0.54	2.49	6.41	0.39	0.11	26.26	10.53	2.04	6.24
0.68	3.43	7.30	0.47	0.11	40.93	11.94	1.97	7.08

100 YR Velocity Head (V^2/2g) 2.21 **ft**
Depth Required 2.9 **ft**
Min. Depth Provided 3.0 **ft**

SWALE 1B

Known:

Q100 =	40.84 **cfs**	**V100**	10.66 **ft/s^2**	**D**	0.74 **ft**	
Q25 =	26.66 **cfs**	**V25**	9.43 **ft/s^2**	**D**	0.59 **ft**	
Slope =	0.08					
Bottom Width =	3 **feet**					
Manning's Number =	0.025					

Calculations (3:1 slope):

Depth (ft)	A (ft^2)	P (ft)	R (ft)	S	Q (cfs)	v (ft/s)	Fr #	Top Width
0.59	2.81	6.73	0.42	0.08	26.53	9.43	1.72	6.54
0.74	3.86	7.68	0.50	0.08	41.19	10.66	1.66	7.44

100 YR Velocity Head (V^2/2g) 1.77 **ft**
Depth Required 2.5 **ft**
Min. Depth Provided 2.5 **ft**

SWALE 1C

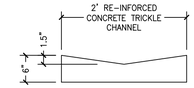
Known:

Q100 =	40.84 **cfs**	**V100**	8.54 **ft/s^2**	**D**	0.40 **ft**	
Q25 =	26.66 **cfs**	**V25**	7.31 **ft/s^2**	**D**	0.31 **ft**	
Slope =	0.08					
Bottom Width =	11 **feet**					
Manning's Number =	0.025					

Calculations (3:1 slope):

Depth (ft)	A (ft^2)	P (ft)	R (ft)	S	Q (cfs)	v (ft/s)	Fr #	Top Width
0.31	3.70	12.96	0.29	0.08	27.02	7.31	1.16	12.86
0.40	4.88	13.53	0.36	0.08	41.69	8.54	1.18	13.40

100 YR Velocity Head (V^2/2g) 1.13 **ft**
Depth Required 1.5 **ft**
Min. Depth Provided 2.0 **ft**

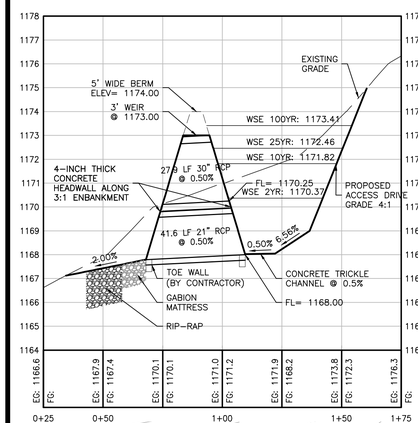


TRICKLE CHANNEL DETAIL

NTS

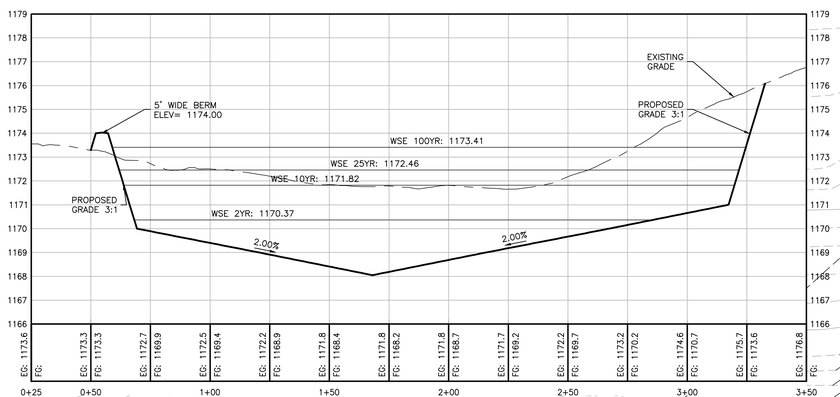
NOTES:

1. A REINFORCED CONCRETE CHANNEL MUST BE USED IF THE CHANNEL SLOPE IS LESS THAN TWO PERCENT.
2. PILOT CHANNEL MUST BE AT LEAST TWO(2) FEET WIDE, ONE AND HALF(1.5) INCHES DEEP, AND BE CAPABLE OF WITHSTANDING VEHICULAR LOADING.
3. SIDE SLOPES SHALL BE SMOOTH EARTHEN FREE OF ROCK AND SHALL RECEIVE THE FOLLOWING, 6" OF TOPSOIL, HYDROMULCH AND A SOIL BLANKET, OR AND APPROVED RETENTION ALTERNATIVE.
4. EXPANSION JOINTS SHALL BE CONSTRUCTED EVERY 40'.
5. CONTROL JOINTS SHALL BE CONSTRUCTED AND SPACE EVERY 5'(MIN).



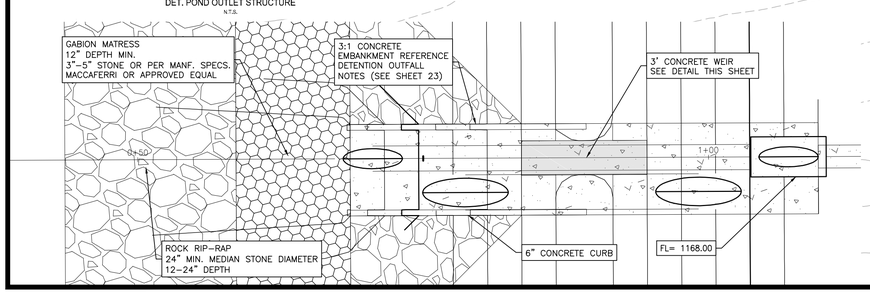
SECTION A-A

SCALE: 1" = 30'
VERTICAL SCALE



SECTION B-B

SCALE: 1" = 30'
VERTICAL SCALE



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

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Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

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469-513-5601

CONSULTANTS:

AUSTIN SPATIAL
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11209 CHERISSE DRIVE
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PHONE: (512) 573-6730

REVISIONS

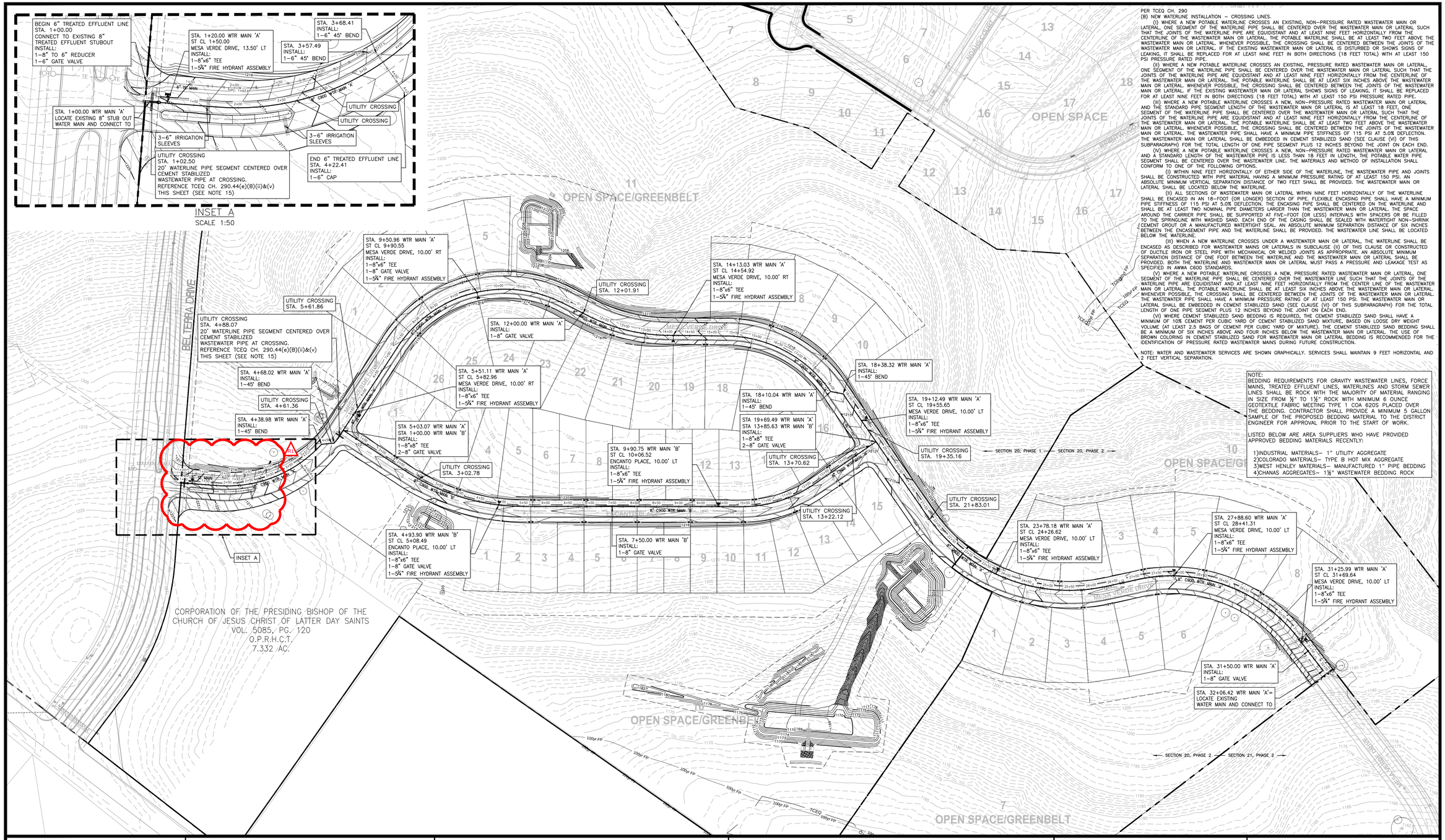
NO	DATE - DESCRIPTION

EDITED: June 5, 2017
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: DETENTION POND

T:\Private\Maier\Cresent Belterra\Design\PH 1 SEC 20\Shts Construction\S-CRESBELTRA_PH1_SEC20-PRO-DET.dwg


BEGIN 6" TREATED EFFLUENT LINE
STA. 1+00.00
CONNECT TO EXISTING 8" TREATED EFFLUENT STUBOUT
INSTALL:
1–8" TO 6" REDUCER
1–6" GATE VALVE
STA. 1+20.00 WTR MAIN 'A'
ST CL 1+50.00
MESA VERDE DRIVE, 13.50' LT
INSTALL:
1–8"x6" TEE
1–5¾" FIRE HYDRANT ASSEMBLY
STA. 3+68.41
INSTALL:
1–6" 45° BEND
STA. 3+57.49
INSTALL:
1–6" 45° BEND
6" TEX MAIN
C900 WTR MAIN 'A'
UTILITY CROSSING
UTILITY CROSSING
STA. 1+00.00 WTR MAIN 'A'
LOCATE EXISTING 8" STUB OUT WATER MAIN AND CONNECT TO
3–6" IRRIGATION SLEEVES
3–6" IRRIGATION SLEEVES
UTILITY CROSSING
STA. 1+02.50
20' WATERLINE PIPE SEGMENT CENTERED OVER CEMENT STABILIZED WASTEWATER PIPE AT CROSSING.
REFERENCE TCEQ CH. 290.44(e)(B)(ii)&(v)
THIS SHEET (SEE NOTE 15)
END 6" TREATED EFFLUENT LINE
STA. 4+22.41
INSTALL:
1–6" CAP
INSET A
SCALE 1:50
OPEN SPACE/GREENBELT
OPEN SPACE
BELTERRA DRIVE
MESA VERDE DRIVE
STA. 9+50.96 WTR MAIN 'A'
ST CL 9+90.55
MESA VERDE DRIVE, 10.00' RT
INSTALL:
1–8"x6" TEE
1–8" GATE VALVE
1–5¾" FIRE HYDRANT ASSEMBLY
UTILITY CROSSING
STA. 5+61.86
UTILITY CROSSING
STA. 12+01.91
STA. 14+13.03 WTR MAIN 'A'
ST CL 14+54.92
MESA VERDE DRIVE, 10.00' RT
INSTALL:
1–8"x6" TEE
1–5¾" FIRE HYDRANT ASSEMBLY
UTILITY CROSSING
STA. 4+00.00
UTILITY CROSSING
STA. 5+00.00
UTILITY CROSSING
STA. 6+00.00
UTILITY CROSSING
STA. 7+00.00
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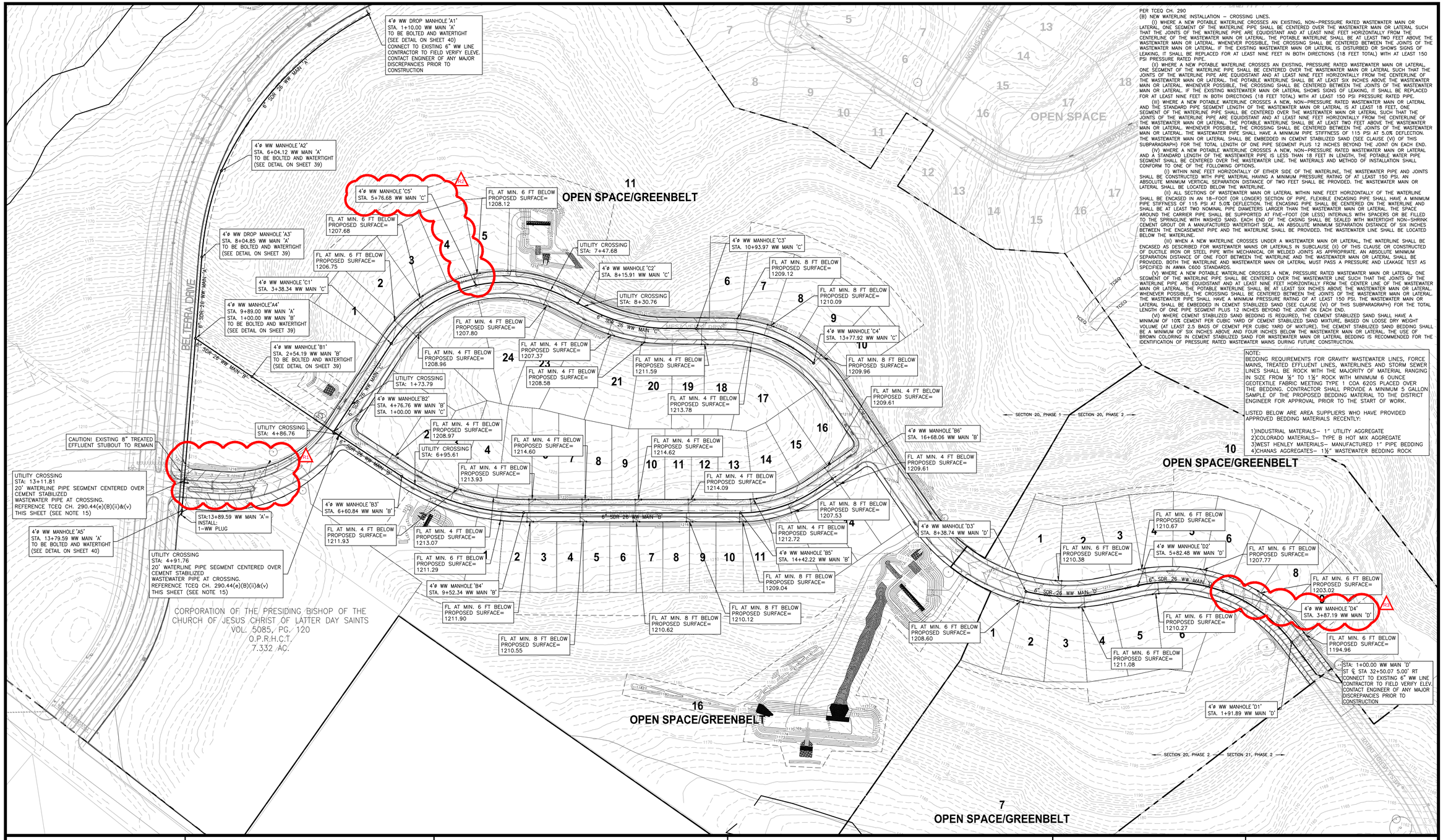
STA.



PER TCEQ CH. 290

(B) NEW WATERLINE INSTALLATION – CROSSING LINES.

(I) WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.

(II) WHERE A NEW POTABLE WATERLINE CROSSES AN EXISTING, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. IF THE EXISTING WASTEWATER MAIN OR LATERAL SHOWS SIGNS OF LEAKING, IT SHALL BE REPLACED FOR AT LEAST NINE FEET IN BOTH DIRECTIONS (18 FEET TOTAL) WITH AT LEAST 150 PSI PRESSURE RATED PIPE.

(III) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL AND THE STANDARD PIPE SEGMENT LENGTH OF THE WASTEWATER MAIN OR LATERAL IS AT LEAST 18 FEET, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.

(IV) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL AND A STANDARD LENGTH OF THE WASTEWATER PIPE IS LESS THAN 18 FEET IN LENGTH, THE POTABLE WATER PIPE SEGMENT SHALL BE CENTERED OVER THE WASTEWATER LINE. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS.

(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

(II) ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN NINE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASING PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE ENCASING PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE SHALL BE PROVIDED. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATERLINE.

(III) WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED AS DESCRIBED FOR WASTEWATER MAINS OR LATERALS IN SUBCLAUSE (II) OF THIS CLAUSE OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. BOTH THE WATERLINE AND WASTEWATER MAIN OR LATERAL MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED IN AWWA C600 STANDARDS.

(V) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.

(VI) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.

NOTE:
BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ¼" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
12/7/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL
TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

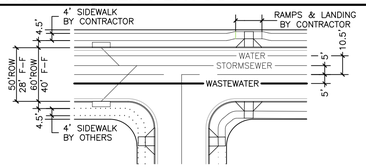
NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN
R2	2017-11-20-ADDITIONAL MANHOLE 'C5'
R3	2017-12-07-ADDITIONAL MANHOLE 'D4'

EDITED: April 27, 2015
PLOTTED: December 7, 2017
PLOTTED BY: tescod11

BELTERRA
SECTION 20-1 & 20-2

WASTEWATER COLLECTION PLAN

STREET & UTILITY LAYOUT



NOTES:
1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF CURB. THE TYPICAL CURB RETURN RADIUS (FROM FACE OF CURB) IS 25'. ALL CURB RAMPS AS WELL AS SIDEWALKS SHOWN AS SOLID LINES ARE TO BE CONSTRUCTED BY CONTRACTOR WITH THIS CONTRACT. VALLEY GUTTERS SHALL BE INSTALLED ONLY WHERE CALLED FOR IN THESE PLANS.
2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

750	EXISTING CONTOURS	FM	WW FM LINE AS NOTED
	PHASE BOUNDARY/ROW		WW FM CLEAN OUT
	DOUBLE WATER SERVICE		WW FLOW ARROW
	SINGLE WATER SERVICE	WW	WW MANHOLE AS NOTED
WL	WTR LN AS NOTED		WW LINE AS NOTED
	AUTOMATIC AIR RELEASE VALVE		DOUBLE WASTEWATER SRVC
	WTR BLOW OFF VALVE		GRINDER PUMP
	FIRE HYDRANT		SINGLE WASTEWATER SRVC
	GATE VALVE AS NOTED	ST	SS LINE AS NOTED
WM	EX. WATER METER	SS	STORM SEWER MANHOLE
			SS BOX CULVERT AS NOTED
T	ELECTRIC TRANSFORMER		SS LATERAL FROM CURB OR AREA INLET
	FITTINGS AS NOTED		

NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IMMEDIATELY PRIOR TO THE BEGINNING OF CONSTRUCTION. ANY EXPENSE TO THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
2. BEFORE DIGGING CALL TEXAS 811.
3. CAUTION!!! THE DEPTH OF EXISTING UNDERGROUND ELECTRICAL, GAS AND TELECOMM UTILITIES IS UNKNOWN. CONTRACTOR SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY PROVIDERS.
4. WASTEWATER MANHOLE LIDS SHALL NOT REFERENCE CITY OF AUSTIN.
5. ALL MANHOLES SHALL BE COATED WITH SEWPERCOAT CEMENTITIOUS PER CITY OF AUSTIN STANDARDS.
6. ALL MANHOLES SHALL BE 4' DIA. UNLESS OTHERWISE SPECIFIED.
7. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THEINLET.
8. SERVICES LOCATED AT BACK OF LOT SHALL BE LOCATED IN THE R.O.W., NOT ON PRIVATE PROPERTY.
9. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
10. ALL PIPE BEDDING SHALL BE 1" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACE OF ON TOP OF GRAVEL (NO SAND)
11. ALL PAVEMENT, CURB AND OTHER THOSE NOT SHOWN, SHALL BE SUBSIDIARY TO THE COST OF THE PIPE.
12. THE TRENCH AROUND THE MANHOLE SHOULD BE PRE-FILLED IN COMPACTED LAYERS USING THE SAME PROCESS AS ALL UTILITY TRENCHES.
13. A POTHOLE TRENCH SHOULD BE EXCAVATED INTO THE COMPLETED COMPACTED TRENCH ON OPPOSITE SIDES OF THE MANHOLE. THE DEEPEST PART OF THE POTHOLE TRENCH SHOULD BE ADJACENT TO THE MANHOLE WITH THE TRENCH BECOMING SHALLOWER AS DISTANCE INCREASES AWAY FROM THE MANHOLE. THE FILL USED TO BACKFILL AROUND THE MANHOLE SHOULD BE TESTED FOR COMPACTION USING STANDARD NUCLEAR DENSITY TESTING METHODOLOGY. COMPACTION SHOULD BE 95% OF OPTIMUM WITH THE MOISTURE CONTENT WITHIN 3 PERCENTAGE POINTS OF OPTIMUM. A COMPACTION TEST SHOULD BE TAKEN FOR EACH APPROXIMATELY 12-INCH CHANGE IN ELEVATION OF THE TRENCH.
14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. PER TAC, TCEQ CH. 290.44(E)(B)(ii)&(v)
(B) NEW WATERLINE INSTALLATION – CROSSING LINES.
(I) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS.
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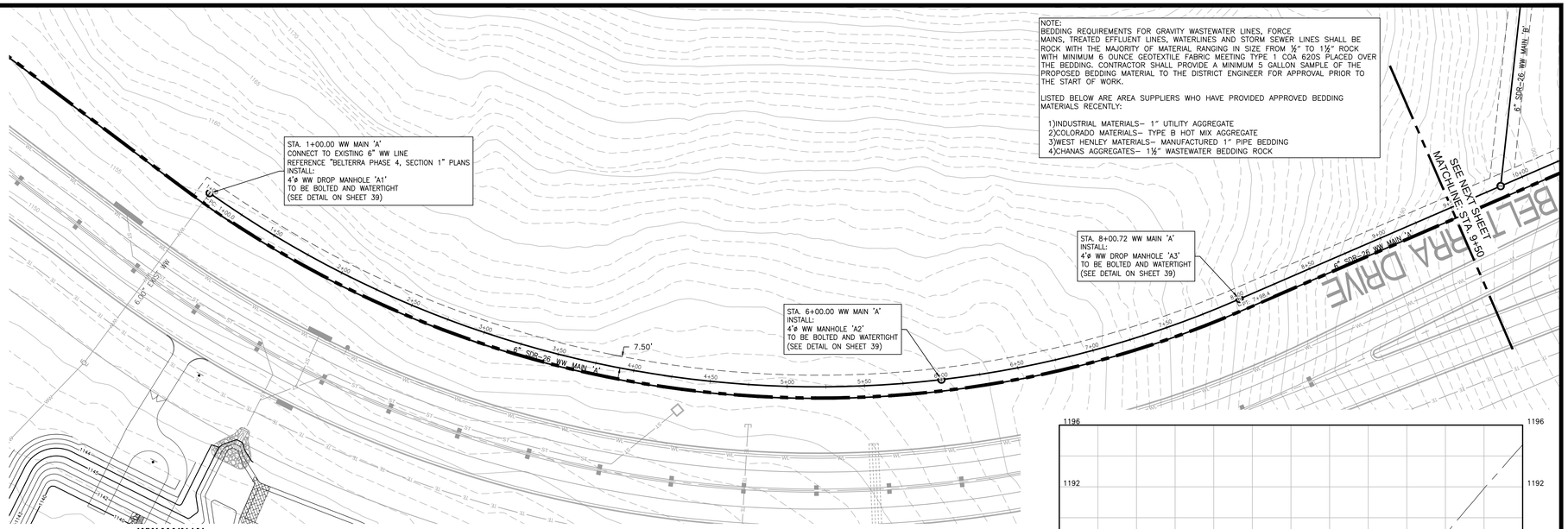
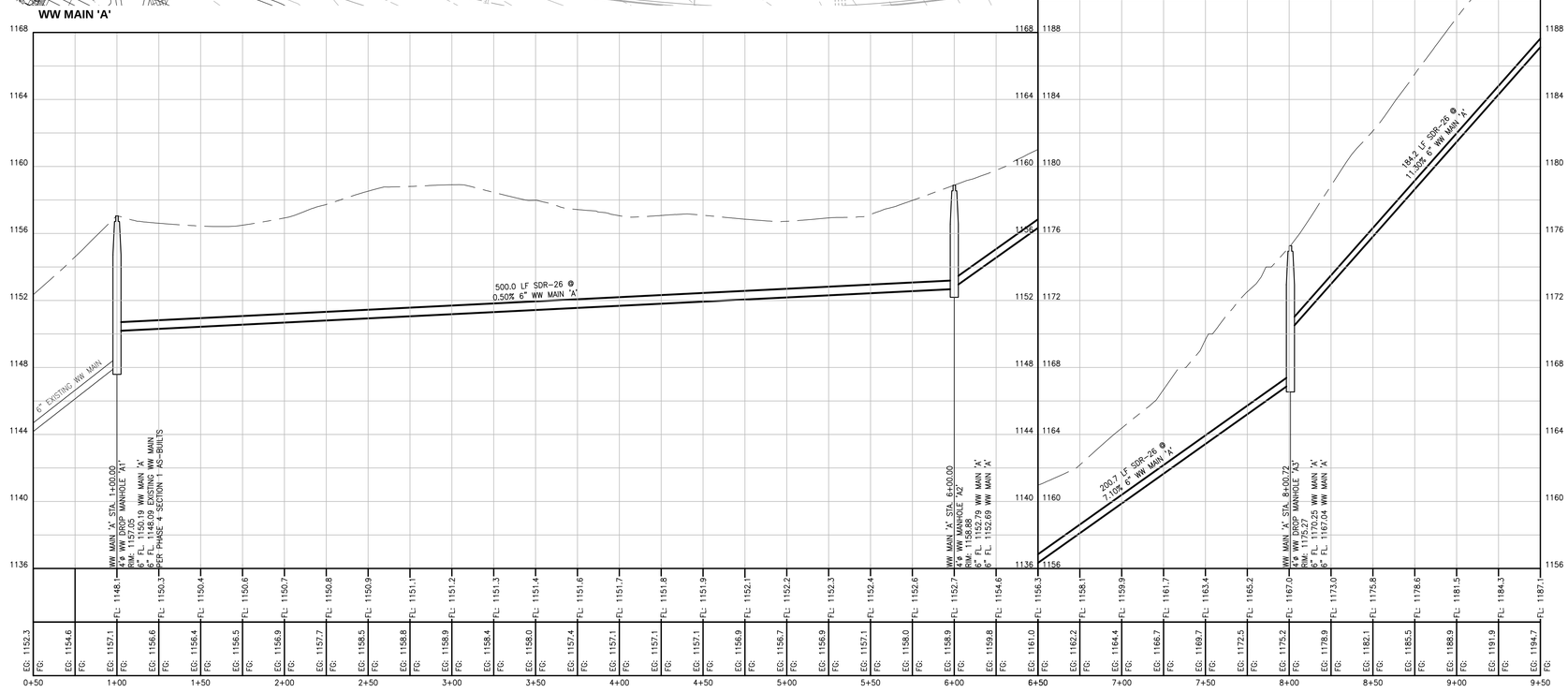
17. AS STATED IN CONTRACT DOCUMENTS TECHNICAL SPECIFICATIONS, WASTEWATER LINES SHALL BE TELEVISION TESTED PRIOR TO DISTRICT APPROVAL.
18. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 02/28/05.

NORTH ARROW & SCALE

KEYMAP

T:\Private\Maker\Crescent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-WWO.dwg



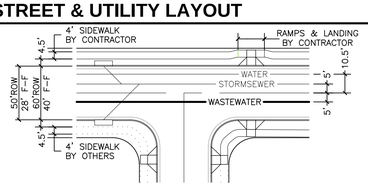


PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN

EG: 686.3	EXISTING GRADE ELEVATION AT STREET CENTER LINE
FG: 685.5	FINISHED GRADE ELEVATION AT STREET CENTER LINE
FL: 645.5	FLOW LINE

STREET & UTILITY LAYOUT



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	DOUBLE WATER SERVICE		WW FLOW ARROW
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	AUTOMATIC AIR RELEASE VALVE		DOUBLE WASTEWATER SRVC
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NOTES

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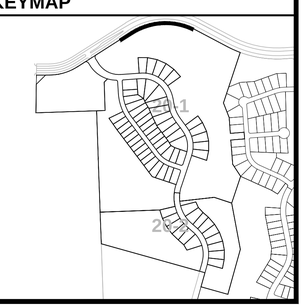
NORTH ARROW & SCALE

0 20' 40' 80'
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
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CONSULTANTS:

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11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

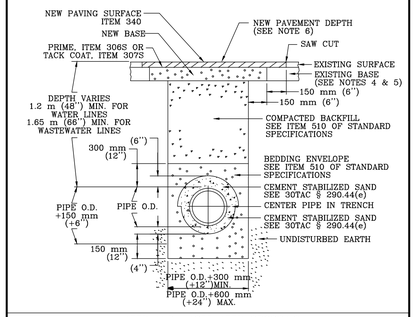
NO	DATE - DESCRIPTION

EDITED: April 28, 2015
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

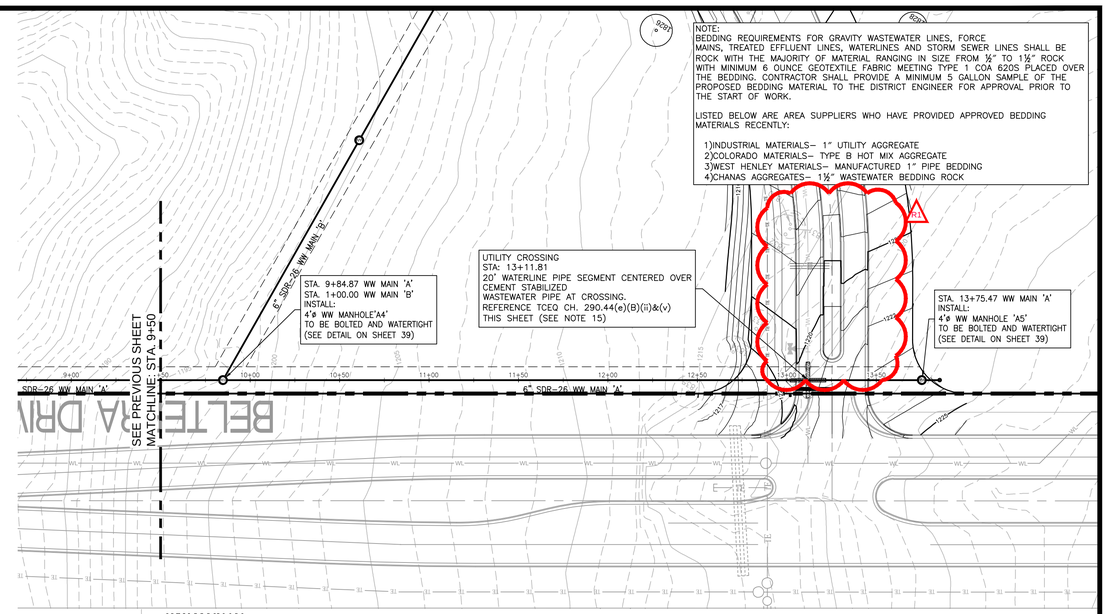
PLAN & PROFILE: WASTEWATER MAIN 'A', STA: 0+50-9+50

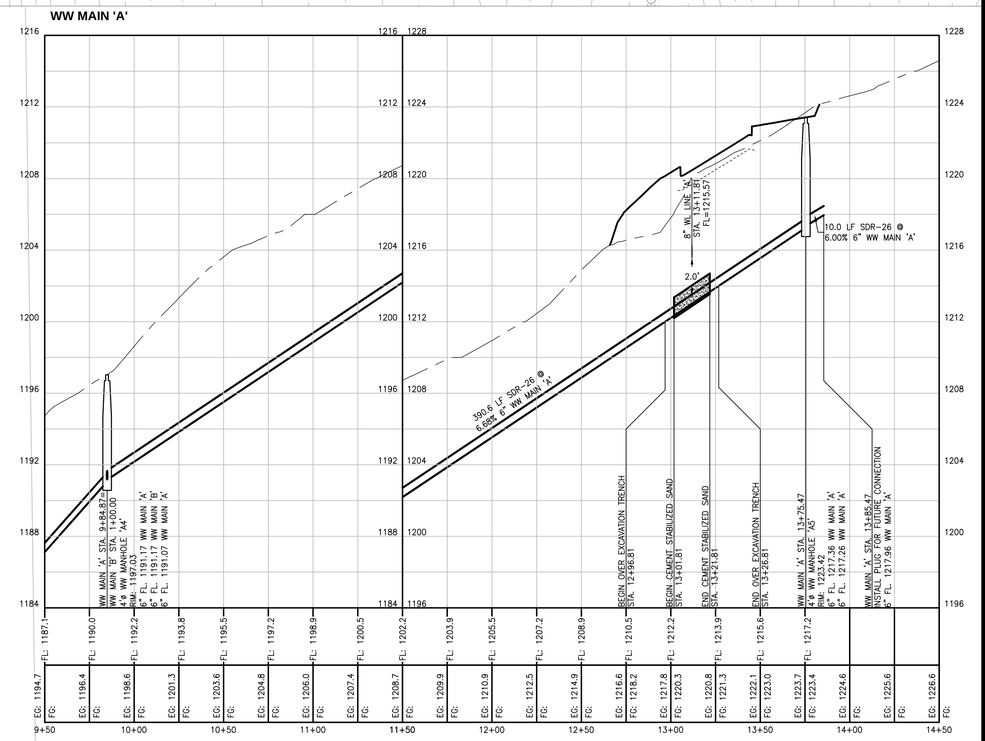
T:\Private\Maxor\Crescent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-WW MAIN 'A'.dwg



WATER AND WASTEWATER CROSSING OVER EXCAVATION TRENCH DETAIL

NOTES:
1. WHEN CEMENT STABILIZED SAND IS USED, THE TRENCH SHALL BE OVER EXCAVATED BY 12 INCHES TO PROVIDE A MINIMUM OF 12 INCHES OF GRAVEL BELOW THE CEMENT STABILIZED SAND TO ALLOW FOR GROUND WATER FLOW THROUGH TRENCHES.
2. OVER EXCAVATION SHALL EXTEND 5 FEET BEYOND THE CEMENT STABILIZED SAND ON BOTH SIDES OF THE PIPE.
3. THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30TAC § 290.44(e).





PROFILE LEGEND

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- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
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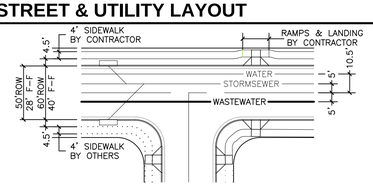
- FL: 645.5 — FLOW LINE

STREET & UTILITY LAYOUT



NOTES:
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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

- 750 — EXISTING CONTOURS
- PHASE BOUNDARY/ROW
- DOUBLE WATER SERVICE
- SINGLE WATER SERVICE
- WL — WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- WM — EX. WATER METER
- T — ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- FM — WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- ST — SS LINE AS NOTED
- SS — STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
2. BEFORE DIGGING CALL TEXAS 811.
3. CAUTION!!! THE DEPTH OF EXISTING UNDERGROUND ELECTRICAL, GAS AND TELECOMM UTILITIES IS UNKNOWN. CONTRACTOR SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY PROVIDERS.
4. WASTEWATER MANHOLE LIDS SHALL NOT REFERENCE CITY OF AUSTIN.
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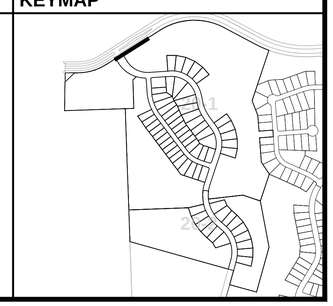
6. ALL MANHOLES SHALL BE 4" DIA. UNLESS OTHERWISE SPECIFIED.
7. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THEINLET.
8. WATER METERS SHALL BE AT BACK OF LOT SHALL BE LOCATED IN THE R.O.W., NOT ON PRIVATE PROPERTY.
9. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
10. ALL PIPE BEDDING SHALL BE ¾" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACED ON TOP OF GRAVEL. (NO SAND)
11. COST OF ALL FITTINGS, INCLUDING THOSE NOT SHOWN, SHALL BE SUBSIDIARY TO THE COST OF THE PIPE.
12. THE TRENCH AROUND THE MANHOLE SHOULD BE PRE-FILLED IN COMPACTED LAYERS USING THE SAME PROCESS AS ALL UTILITY TRENCHES.
13. A 'POTHOLE' TRENCH SHOULD BE EXCAVATED INTO THE COMPLETED COMPACTED TRENCH ON OPPOSITE SIDES OF THE MANHOLE. THE DEEPEST PART OF THE 'POTHOLE' TRENCH SHOULD BE ADJACENT TO THE MANHOLE WITH THE TRENCH BECOMING SHALLOWER AS DISTANCE INCREASES AWAY FROM THE MANHOLE. THE FILL USED TO BACKFILL AROUND THE MANHOLE SHOULD BE TESTED FOR COMPACTION USING STANDARD NUCLEAR DENSITY TESTING METHODLOGY. COMPACTION SHOULD BE 95% OF OPTIMUM WITH THE MOISTURE CONTENT WITHIN 3 PERCENTAGE POINTS OF OPTIMUM. A MINIMUM OF ONE TEST SHOULD BE MADE FOR EACH APPROXIMATELY 12-INCH CHANGE IN ELEVATION OF THE TRENCH.
14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. PER TAC, TCEQ CH. 290.44(E)(B)(ii)&(v)
(B) NEW WATERLINE INSTALLATION -- CROSSING LINES.
(ii) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS:
(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.
(II) REFER TO TAC
(V) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.
16. DO NOT EXCEED MAXIMUM CEMENT STABILIZED SAND(CSS) TO ENSURE NON-DETERIORATING BEDDING. CSS CAN CONTAMINATE POTENTIAL GROUNDWATER.
17. AS STATED IN CONTRACT DOCUMENTS TECHNICAL SPECIFICATIONS, WASTEWATER LINES SHALL BE TELEVISION TESTED PRIOR TO DISTRICT APPROVAL.
18. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 02/28/05.
19. JOINT ON EACH END.

NORTH ARROW & SCALE

0 20' 40' 80'
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
7/25/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

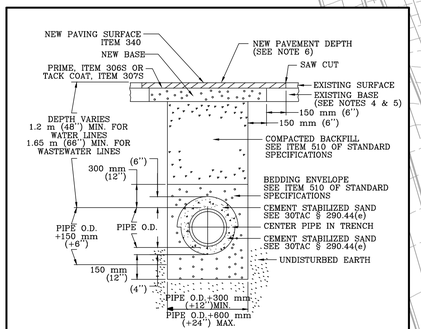
NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: April 28, 2015
PLOTTED: September 25, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

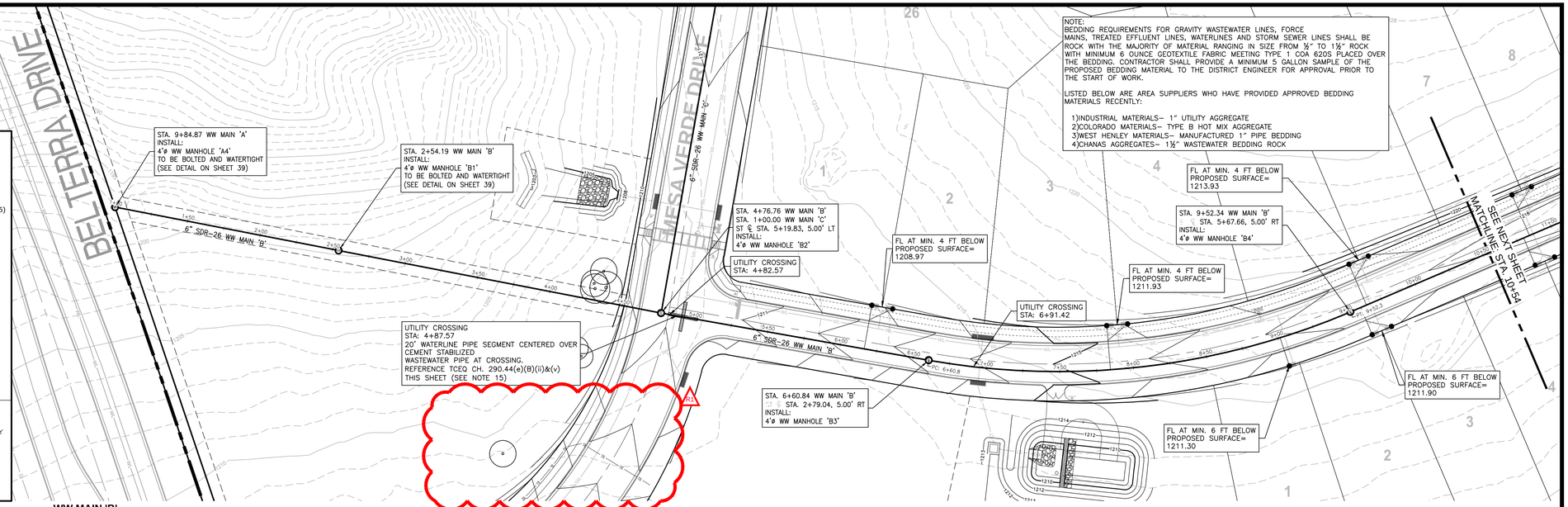
PLAN & PROFILE: WASTEWATER MAIN 'A', STA: 9+50-END

T:\Private\Mesa\Crescent Belterra\Design\PH 1 SEC 20\Shts Construction\S-CRESBELTRA_PH1_SEC20-WW MAIN 'A'.dwg



WATER AND WASTEWATER CROSSING OVER EXCAVATION TRENCH DETAIL

NOTES:
1. WHEN CEMENT STABILIZED SAND IS USED, THE TRENCH SHALL BE OVER EXCAVATED BY 12 INCHES TO PROVIDE A MINIMUM OF 12 INCHES OF GRAVEL BELOW THE CEMENT STABILIZED SAND TO ALLOW FOR GROUND WATER FLOW THROUGH TRENCHES.
2. OVER EXCAVATION SHALL EXTEND 5 FEET BEYOND THE CEMENT STABILIZED SAND ON BOTH SIDES OF THE PIPE.
3. THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30TAC § 290.44(e).



NOTE:
BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ¾" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
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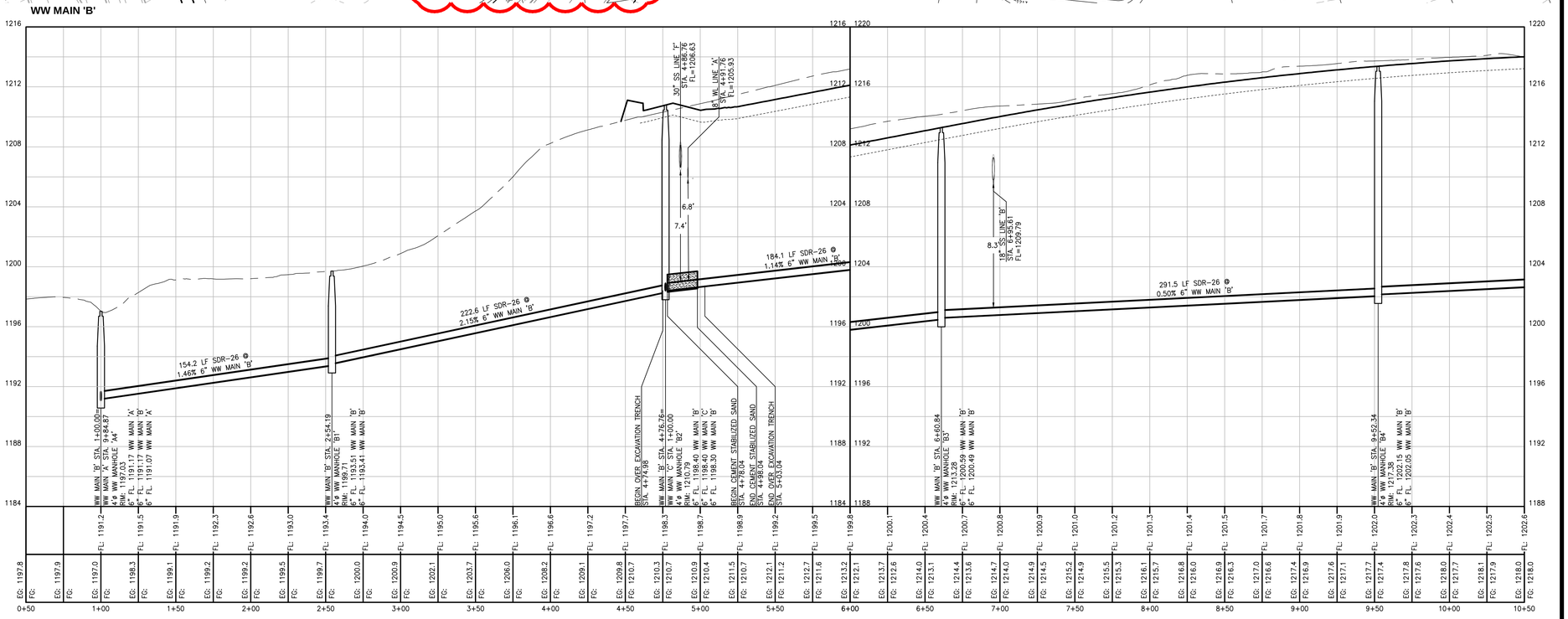
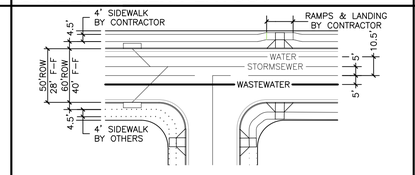
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK



PROFILE LEGEND

EX GRADE AT CENTERLINE	
FINISHED GRADE AT CENTERLINE	
BASE GRADE BELOW CROWN	
EG: 686.3	EXISTING GRADE ELEVATION AT STREET CENTER LINE
FG: 685.5	FINISHED GRADE ELEVATION AT STREET CENTER LINE
FL: 645.5	FLOW LINE

STREET & UTILITY LAYOUT



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LEGEND

750	EXISTING CONTOURS	FM	WW FM LINE AS NOTED
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	DOUBLE WATER SERVICE		WW FLOW ARROW
	SINGLE WATER SERVICE	WW	WW MANHOLE AS NOTED
WL	WTR LN AS NOTED		WW LINE AS NOTED
	AUTOMATIC AIR RELEASE VALVE		DOUBLE WASTEWATER SRVC
	WTR BLOW OFF VALVE		GRINDER PUMP
	FIRE HYDRANT		SINGLE WASTEWATER SRVC
	GATE VALVE AS NOTED	ST	SS LINE AS NOTED
WM	EX. WATER METER	SS	STORM SEWER MANHOLE
T	ELECTRIC TRANSFORMER		SS BOX CULVERT AS NOTED
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NORTH ARROW & SCALE

0 20' 40' 80'
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
9/25/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: May 1, 2017
PLOTTED: September 25, 2017
PLOTTED BY: tescod11

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: WASTEWATER MAIN 'B', STA: 0+50-10+50

D:\Private Master\Crescent Beltterra\Design\PH 1 SEC 20\Sta Construction\S-CRESBELTRA_PH1_SEC20-WW MAIN 'B'.dwg

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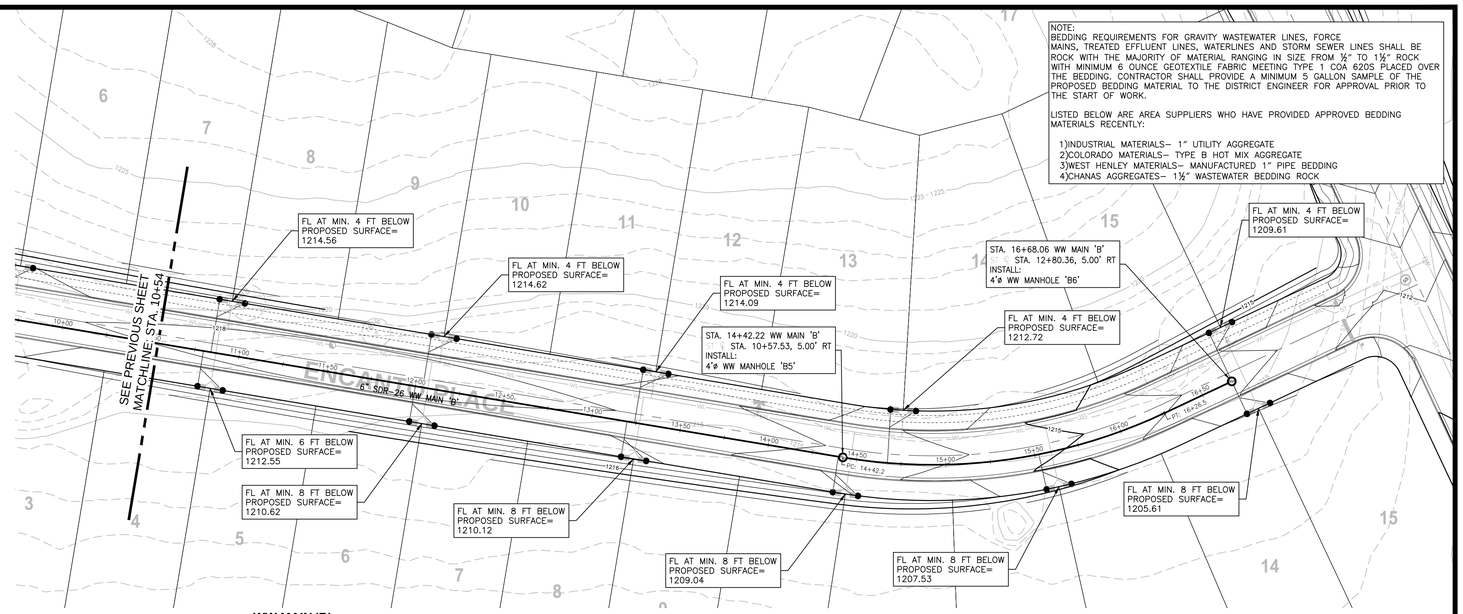
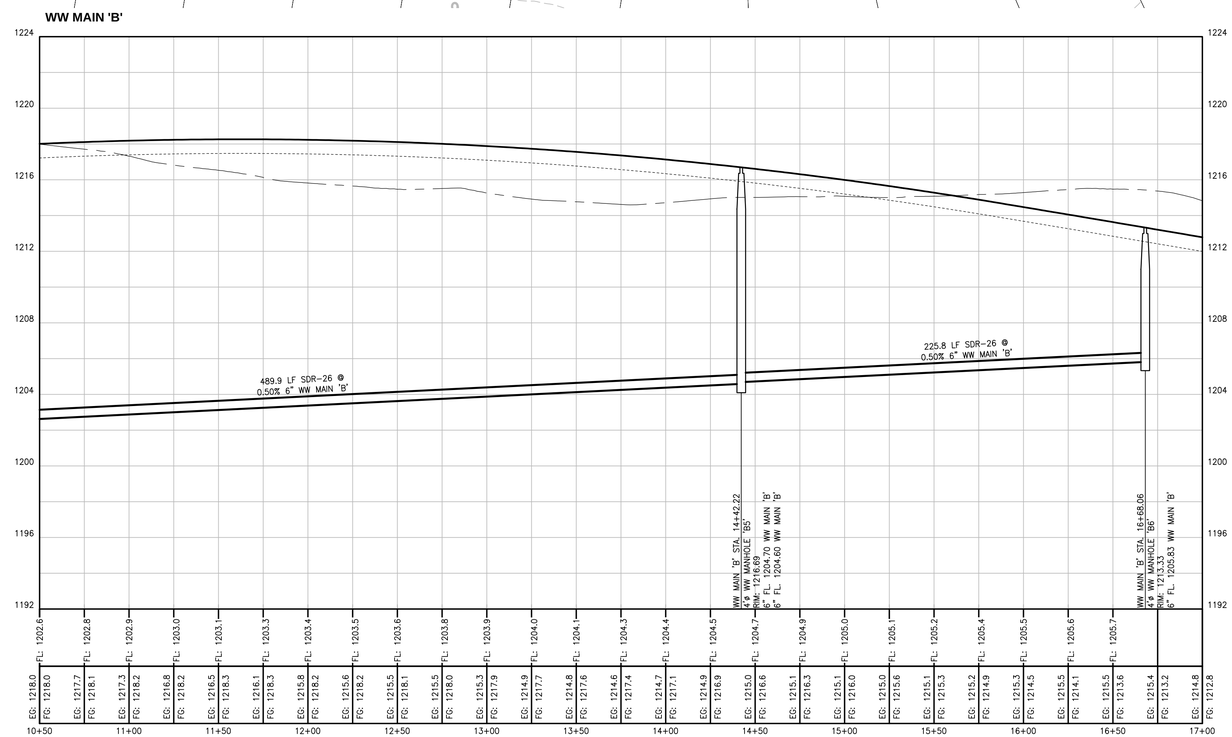
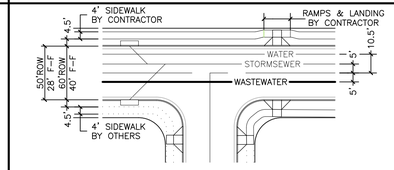




PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE
- FL: 645.5 — FLOW LINE

STREET & UTILITY LAYOUT



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6. ALL MANHOLES SHALL BE 4' DIA. UNLESS OTHERWISE SPECIFIED.
7. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THE INLET.
8. SERVICES LOCATED AT BACK OF LOT SHALL BE LOCATED IN THE R.O.W., NOT ON PRIVATE PROPERTY.
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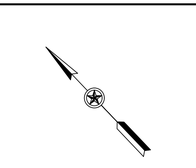
11. COST OF ALL FITTINGS, INCLUDING THOSE NOT SHOWN, SHALL BE SUBSIDIARY TO THE COST OF THE PIPE.
12. THE TRENCH AROUND THE MANHOLE SHOULD BE PRE-FILLED IN COMPACTED LAYERS USING THE SAME PROCESS AS ALL UTILITY TRENCHES.
13. A "POTHOLE" TRENCH SHOULD BE EXCAVATED INTO THE COMPLETED COMPACTED TRENCH ON OPPOSITE SIDES OF THE MANHOLE. THE DEEPEST PART OF THE "POTHOLE" TRENCH SHOULD BE ADJACENT TO THE MANHOLE WITH THE TRENCH BECOMING SHALLOWER AS DISTANCE INCREASES AWAY FROM THE MANHOLE. THE TOP 2 FT. OF THE TRENCH ADJACENT TO THE MANHOLE SHOULD BE TESTED FOR COMPACTION USING STANDARD NUCLEAR DENSITY TESTING METHODOLOGY. COMPACTION SHOULD BE 95% OF OPTIMUM WITH THE MOISTURE CONTENT WITHIN 3 PERCENTAGE POINTS OF OPTIMUM. A COMPACTION TEST SHOULD BE TAKEN FOR EACH APPROXIMATELY 12-INCH CHANGE IN ELEVATION OF THE TRENCH.
14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. PER TAC, TCEQ CH. 290.44(E)(8)(i)&(v)
(B) NEW WATERLINE INSTALLATION – CROSSING LINES.
(i) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS:
(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.
(V) REFER TO TAC
(V) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 7.5 SACKS OF CEMENT PER CUBIC YARD OF MIXTURE). CEMENT STABILIZED SAND SHALL BE COMPACTED TO A MINIMUM OF 90% RELATIVE DENSITY AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.
16. DO NOT EXCEED MINIMUM CEMENT STABILIZED SAND(CSS) TO ENSURE TRADITIONAL BEDDING AROUND CSS CONVEY POTENTIAL GROUNDWATER.
17. AS STATED IN CONTRACT DOCUMENTS TECHNICAL SPECIFICATIONS, WASTEWATER LINES SHALL BE TELEVISION TESTED PRIOR TO DISTRICT APPROVAL.
18. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 02/28/05.

NORTH ARROW & SCALE



HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

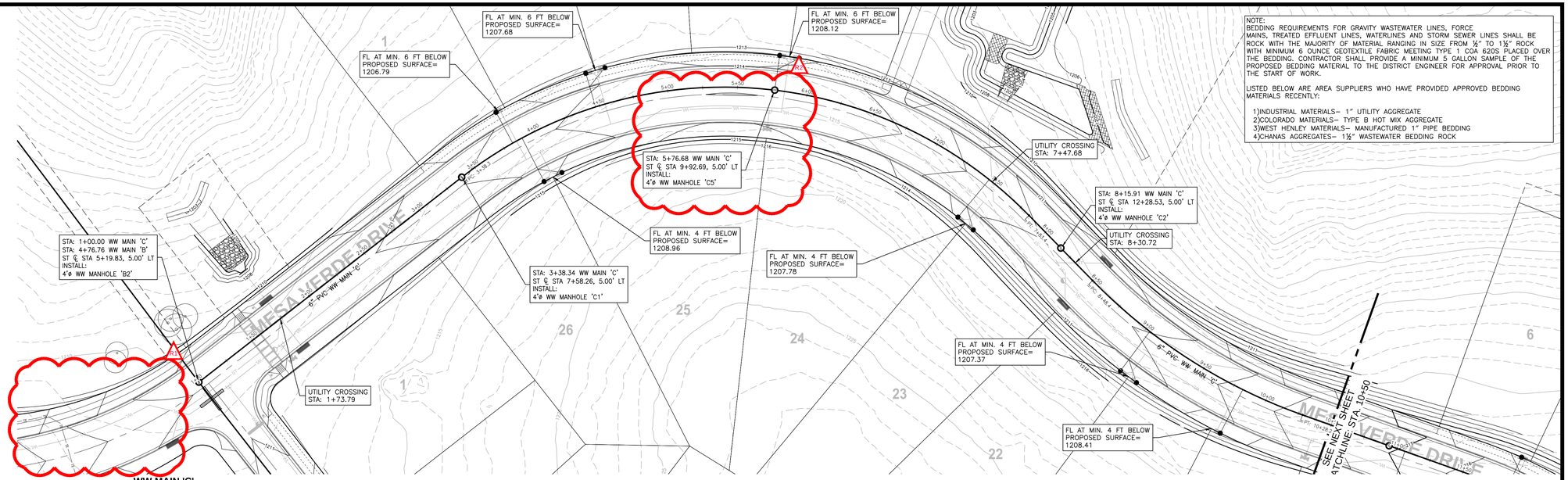
NO	DATE - DESCRIPTION

EDITED: May 1, 2017
PLOTTED: August 22, 2017
PLOTTED BY: Milena Pisani

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: WASTEWATER MAIN 'B', STA: 10+50-END

T:\Private\Wolcan\Crescent Belterra\Design\PH 1 SEC 20\Shts Construction\S-CRESBELTRA_PH1_SEC20-WW MAIN 'B'.dwg



NOTE:
BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ½" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
11/21/15

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

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11209 CHERISSE DRIVE
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CONTACT: PAUL C. SAUVE, RPLS
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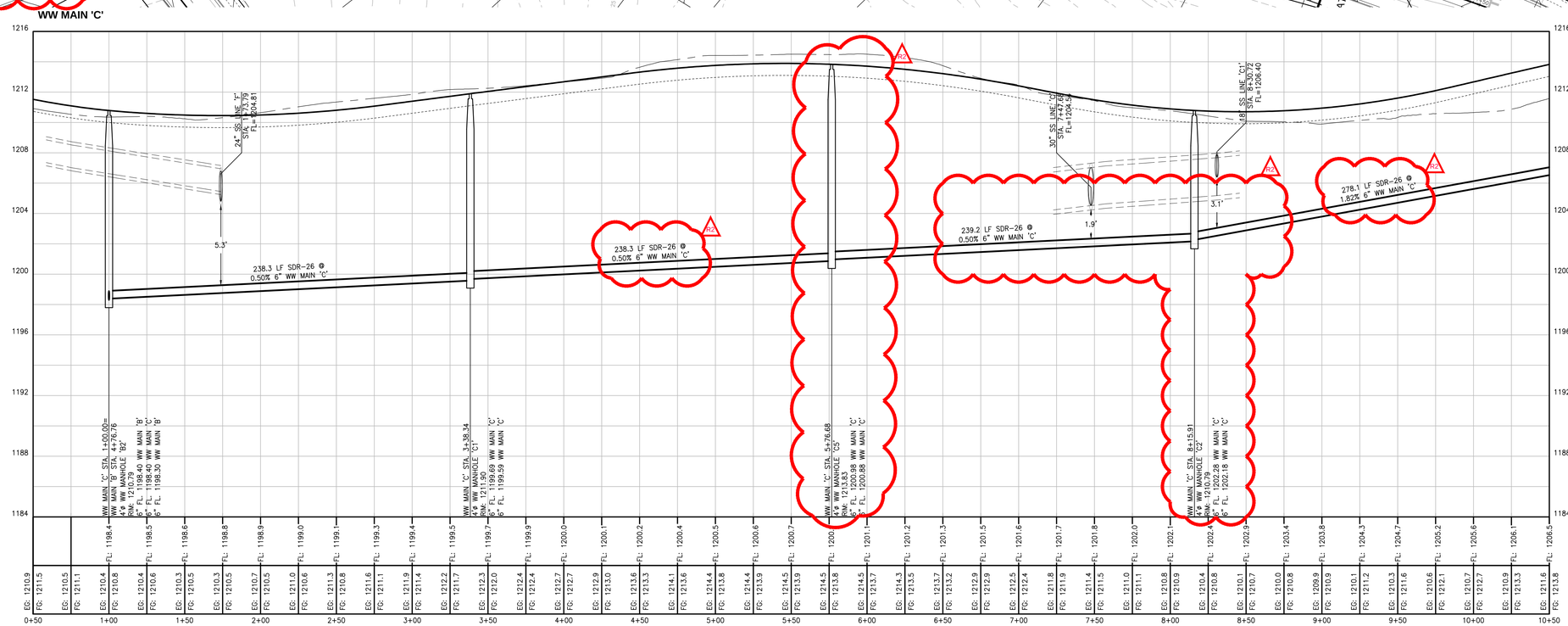
REVISIONS

NO	DATE - DESCRIPTION
R1	2017-08-25-RELOCATE MEDIAN
R2	2017-11-20-ADDITIONAL MANHOLE 'C5'

EDITED: May 1, 2017
PLOTTED: November 21, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

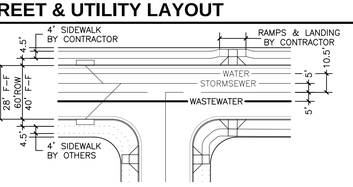
PLAN & PROFILE: WASTEWATER MAIN 'C', STA: 0+50-10+50



PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE
- FL: 645.5 — FLOW LINE

STREET & UTILITY LAYOUT



NOTES:
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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
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LEGEND

- EXISTING CONTOURS
- PHASE BOUNDARY/ROW
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- SINGLE WATER SERVICE
- WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
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- FIRE HYDRANT
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- WW LINE AS NOTED
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NOTES

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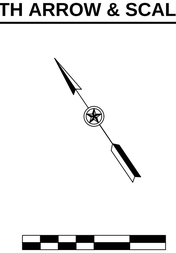
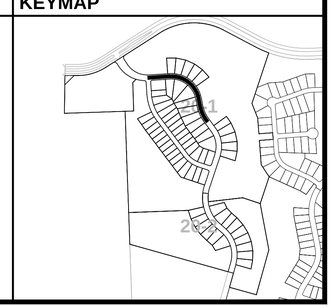


HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



T:\Private\Maker\Crossent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-WW MAIN 'C'.dwg

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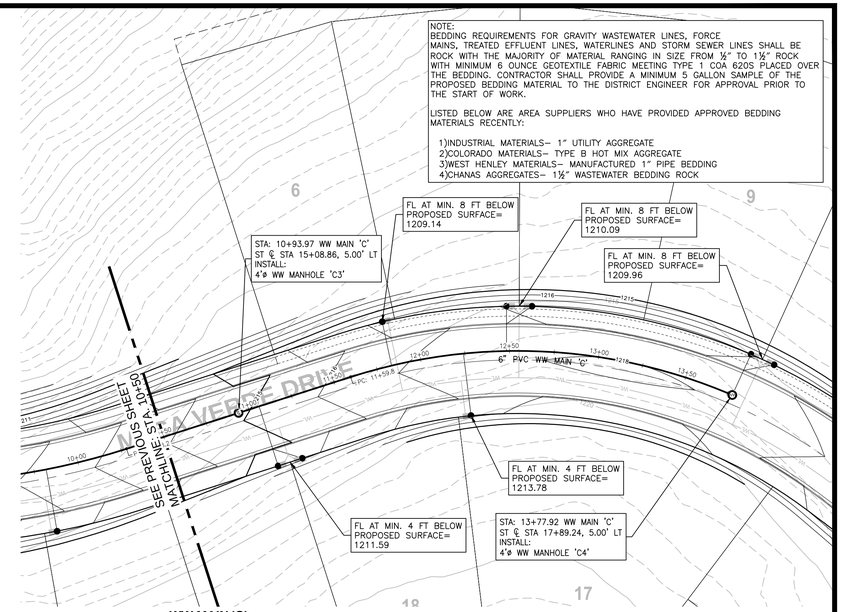

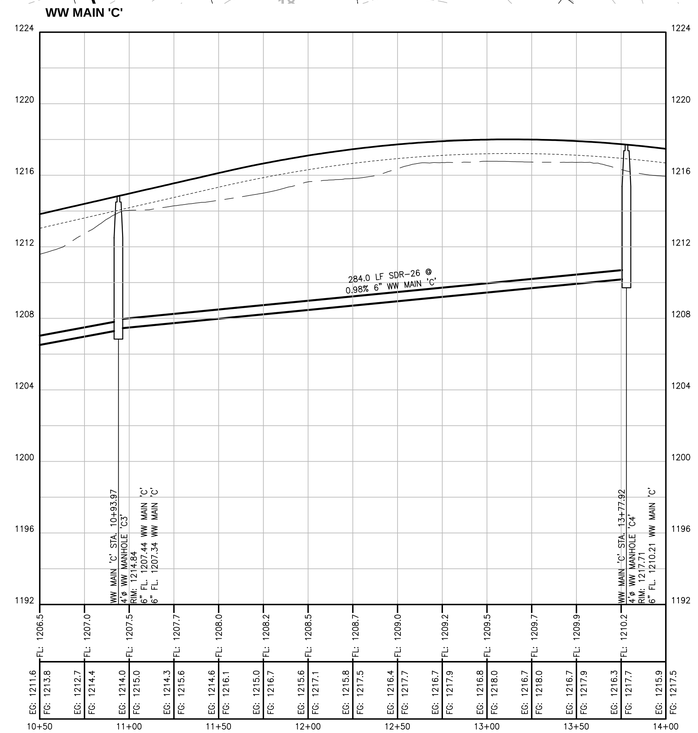

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

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CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION

EDITED: May 1, 2017
PLOTTED: August 22, 2017
PLOTTED BY: TESCA015–PC Carlos A. Martinez

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: WASTEWATER MAIN 'C', STA: 10+50-END

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
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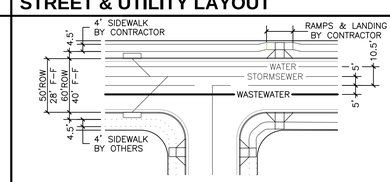

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- WL — WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- WM — EX. WATER METER
- T — ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- FM — WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- ST — SS LINE AS NOTED
- SS — STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
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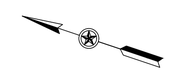
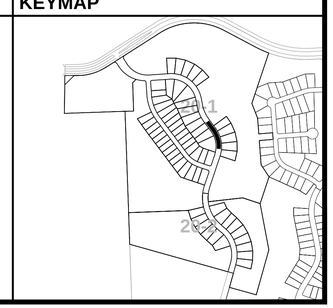
13. A "POTHOLE" TRENCH SHOULD BE EXCAVATED INTO THE COMPLETED COMPACTED TRENCH ON OPPOSITE SIDES OF THE MANHOLE. THE DEEPEST PART OF THE "POTHOLE" TRENCH SHOULD BE ADJACENT TO THE MANHOLE WITH THE TRENCH BECOMING SHALLOWER AS DISTANCE INCREASES AWAY FROM THE MANHOLE. THE FILL USED TO BACKFILL AROUND THE MANHOLE SHOULD BE TESTED FOR COMPACTION USING STANDARD NUCLEAR DENSITY TESTING METHODLOGY. COMPACTION SHOULD BE 95% OF OPTIMUM WITH THE MOISTURE CONTENT WITHIN 3 PERCENTAGE POINTS OF OPTIMUM. A COMPACTION TEST SHOULD BE TAKEN FOR EACH APPROXIMATELY 12–INCH CHANGE IN ELEVATION IN THE TRENCH.
14. ALL WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. PER TAC, TCEQ CH. 290.44(E)(8)(i)&(v)
(8) NEW WATERLINE INSTALLATION – CROSSING LINES.
(i) WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON–PRESSURE RATED WASTEWATER MAIN OR LATERAL, THE SEGMENT OF THE WATERLINE PIPE SHALL BE ARRANGED SO THAT THE JOINTS OF THE WATERLINE PIPE ARE PERPENDICULAR TO THE WASTEWATER MAIN OR LATERAL SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTERLINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST TWO FEET ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM TO ONE OF THE FOLLOWING OPTIONS:
(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.
(II) REFER TO TAC
(v) WHERE CEMENT STABLIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.
16. DO NOT EXCEED MINIMUM CEMENT STABILIZED SAND(CSS) TO ENSURE TRADITIONAL BEDDING AROUND CSS CONVEY POTENTIAL GROUNDWATER.
17. REQUIRED IN CONTRACT DOCUMENTS TECHNICAL SPECIFICATIONS. WASTEWATER LINES SHALL BE TELEVISION TESTED PRIOR TO DISTRICT APPROVAL.
19. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 02/28/05.

NORTH ARROW & SCALE

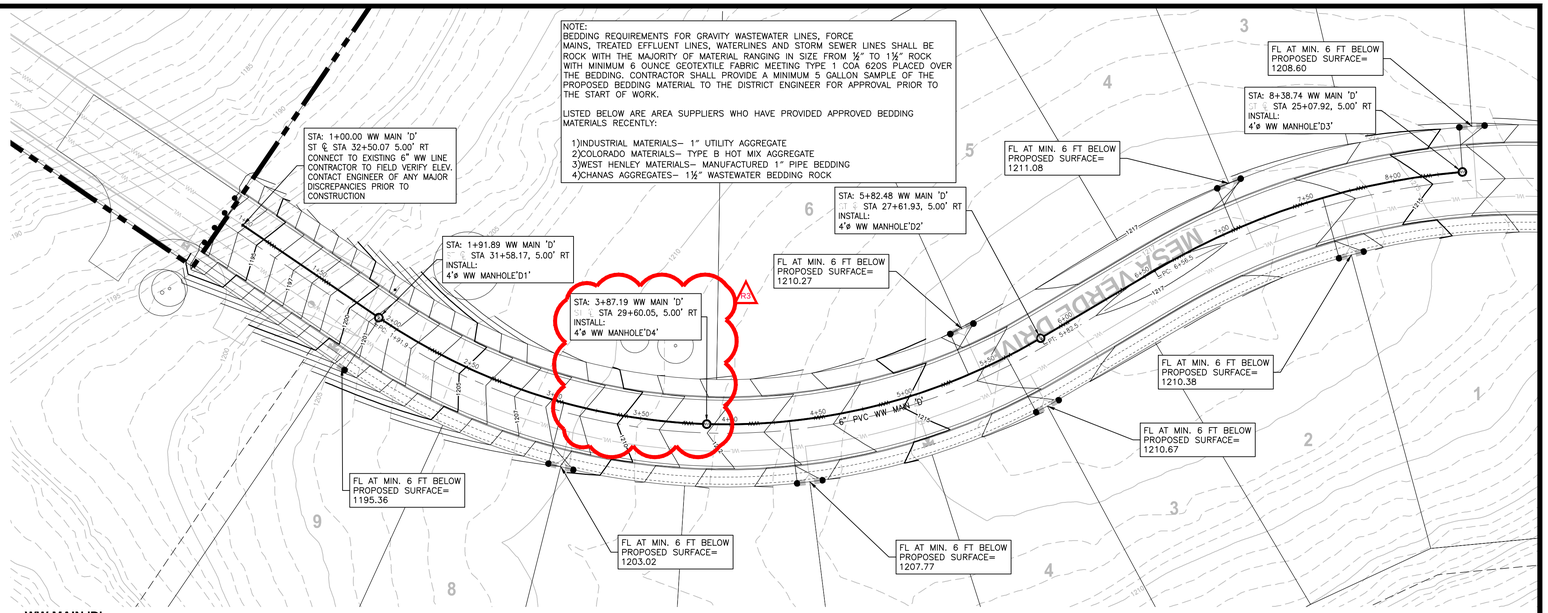


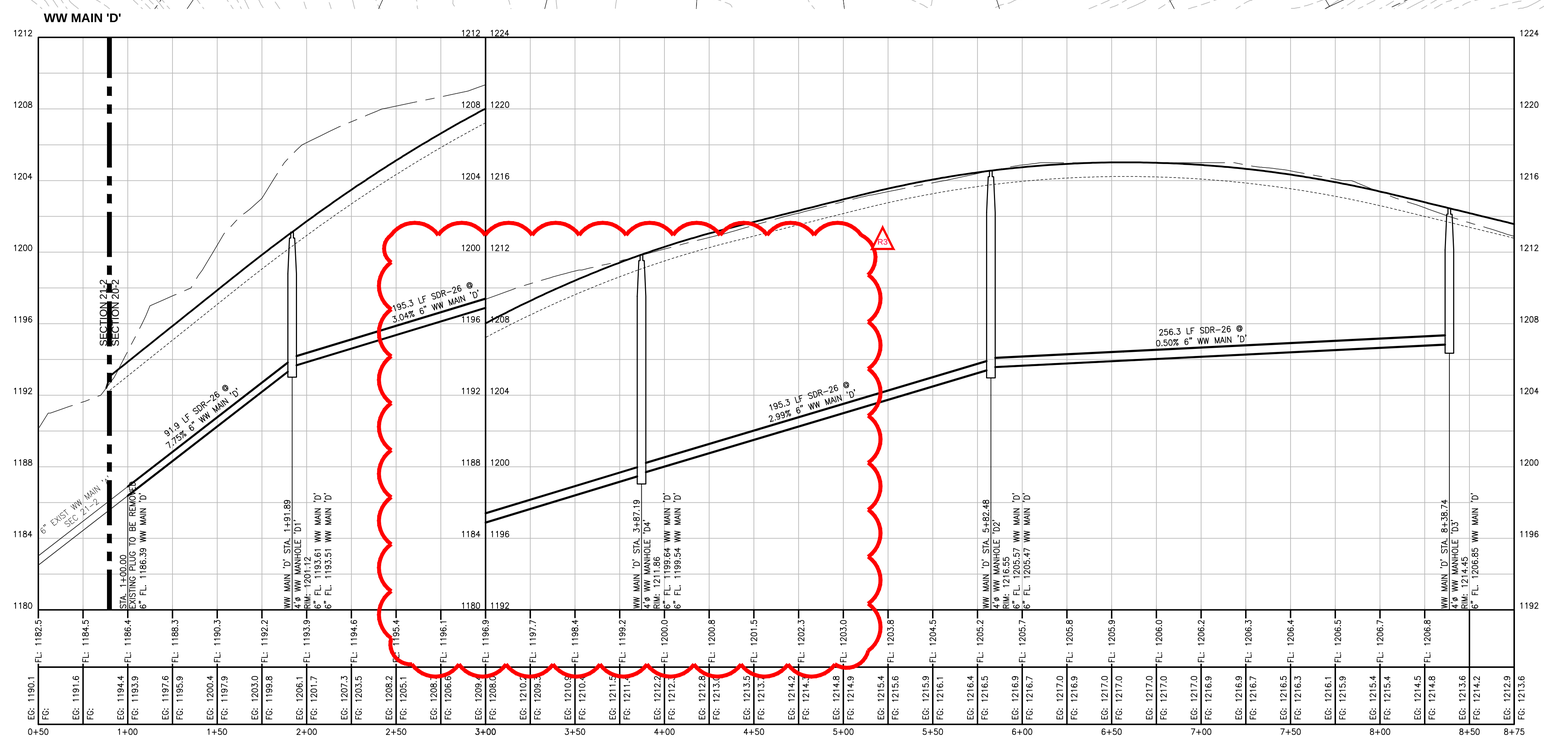
0 20' 40' 80'
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



T:\Private\Master\Crescent Beltenra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-WW MAIN 'C'.dwg



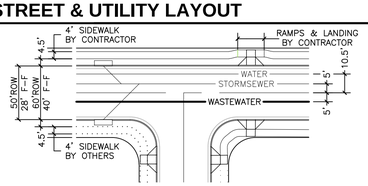


PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN

EG: 686.3	EXISTING GRADE ELEVATION AT STREET CENTER LINE
FG: 685.5	FINISHED GRADE ELEVATION AT STREET CENTER LINE
FL: 645.5	FLOW LINE

STREET & UTILITY LAYOUT



NOTES:
1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF CURB. THE TYPICAL CURB RETURN RADIUS (FROM FACE OF CURB) IS 25'. ALL CURB RAMPS AS WELL AS SIDEWALKS SHOWN AS SOLID LINES ARE TO BE CONSTRUCTED BY CONTRACTOR WITH THIS CONTRACT. VALLEY GUTTERS SHALL BE INSTALLED ONLY WHERE CALLED FOR IN THESE PLANS.
2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

- EXISTING CONTOURS
- PHASE BOUNDARY/ROW
- DOUBLE WATER SERVICE
- SINGLE WATER SERVICE
- WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- EX. WATER METER
- ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- SS LINE AS NOTED
- STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT NO EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
2. BEFORE DIGGING CALL TEXAS 811
3. CAUTION!! THE DEPTH OF EXISTING UNDERGROUND ELECTRICAL, GAS AND TELECOMM UTILITIES IS UNKNOWN. CONTRACTOR SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY PROVIDERS.
4. WASTEWATER MANHOLE LIDS SHALL NOT REFERENCE CITY OF AUSTIN.
5. ALL MANHOLES SHALL BE COATED WITH SEWPERCOAT CEMENTITIOUS PER CITY OF AUSTIN STANDARDS.
6. ALL MANHOLES SHALL BE 4' DIA. UNLESS OTHERWISE SPECIFIED.
7. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THEIRS.
8. SERVICES LOCATED AT BACK OF LOT SHALL BE LOCATED IN THE R.O.W., NOT ON PRIVATE PROPERTY.
9. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
10. ALL PIPE BEDDING SHALL BE ¾" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACED ON TOP OF GRAVEL. (NO SAND)
11. ALL PIPE, FITTINGS, VALVES, FIRE HYDRANTS, SERVICE NOT SHOWN, SHALL BE SUBSTANTIALLY TO THE COLOR OF THE PIPE.
12. THE TRENCH AROUND THE MANHOLE SHOULD BE PRE-FILLED IN COMPACTED LAYERS USING THE SAME PROCESS AS ALL UTILITY TRENCHES.
13. A 'POTHOLE' TRENCH SHOULD BE EXCAVATED INTO THE COMPLETED COMPACTED TRENCH ON OPPOSITE SIDES OF THE MANHOLE. THE DEEPEST PART OF THE 'POTHOLE' TRENCH SHOULD BE ADJACENT TO THE MANHOLE WITH THE TRENCH BECOMING SHALLOWER AS DISTANCE INCREASES AWAY FROM THE MANHOLE. THE FILL USED TO BACKFILL AROUND THE MANHOLE SHOULD BE TESTED FOR COMPACTION USING STANDARD NUCLEAR DENSITY TESTING METHODOLOGY. COMPACTION SHOULD BE 95% OF OPTIMUM WITH THE MOISTURE CONTENT WITHIN 3 PERCENTAGE POINTS OF OPTIMUM. A COMPACTION TEST SHOULD BE TAKEN FOR EACH APPROXIMATELY 12–INCH CHANGE IN ELEVATION OF THE TRENCH.
14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
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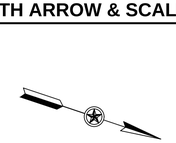
16. DO NOT EXCEED MINIMUM CEMENT STABILIZED SAND(CSS) TO ENSURE TRADITIONAL BEDDING AROUND CSS CONVEY POTENTIAL GROUNDWATER.
17. AS STATED IN CONTRACT DOCUMENTS TECHNICAL SPECIFICATIONS, WASTEWATER LINES SHALL BE TELEVISION TESTED PRIOR TO DISTRICT APPROVAL.
19. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 02/28/05.

NORTH ARROW & SCALE



0 20' 40' 80'
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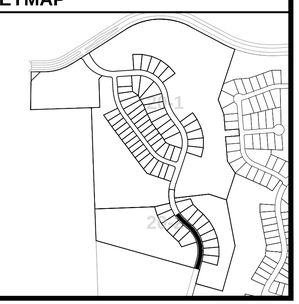
KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
12/7/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL
TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION
R3	2017-12-07-ADDITIONAL MANHOLE "D4"

EDITED: May 1, 2017
PLOTTED: December 7, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

PLAN & PROFILE: WASTEWATER MAIN 'D', STA: 0+50-END

I:\Private\Walker\Crescent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-WW MAIN 'D'.dwg

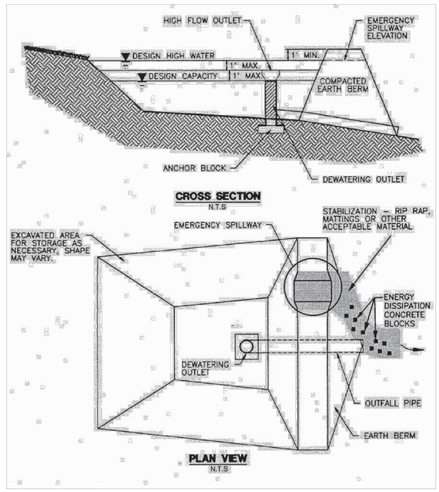
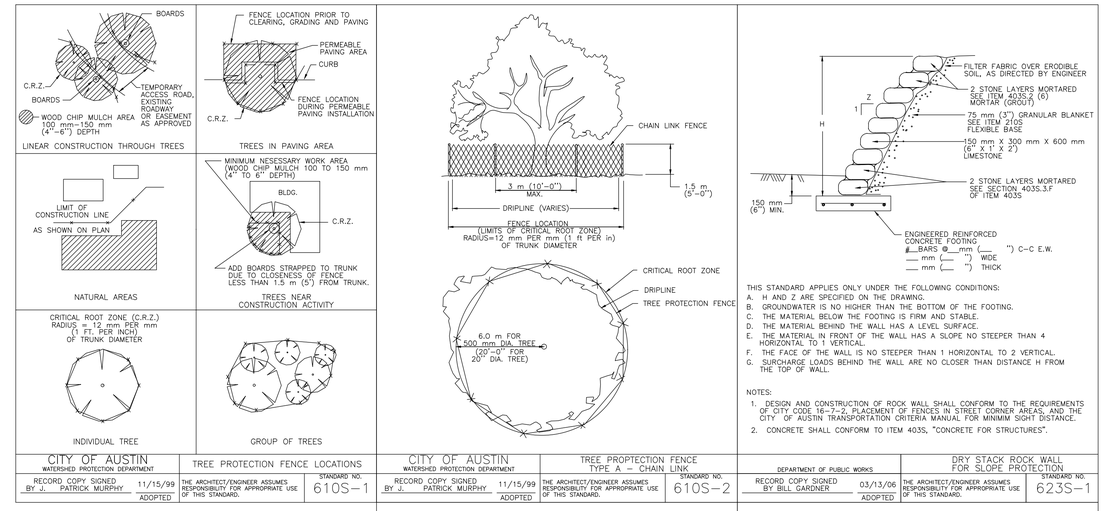


Figure 1-41 Schematic of a Sediment Basin (NCTCOG, 1993)

ROUGH CUT PONDS PROPOSED AS TEMPORARY SEDIMENT BASINS (REFER TO SEQUENCE OF CONSTRUCTION). ALTERNATE DEWATERING METHODS ACCEPTABLE IN ACCORDANCE WITH TCEQ RG-348 SECTION 1.4.15. NO SEPARATE PAYMENT FOR BASIN DEWATERING, INCLUDE COSTS IN RELATED BID ITEMS.



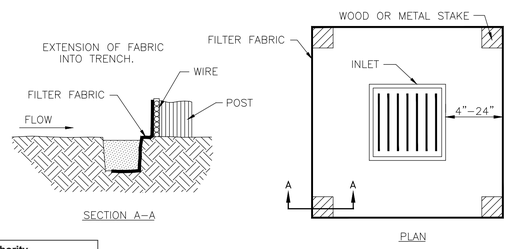
THIS STANDARD APPLIES ONLY UNDER THE FOLLOWING CONDITIONS:

A. H AND Z ARE SPECIFIED ON THE DRAWING.
B. GROUNDWATER IS NO HIGHER THAN THE BOTTOM OF THE FOOTING.
C. THE MATERIAL BELOW THE FOOTING IS FIRM AND STABLE.
D. THE MATERIAL BEHIND THE WALL HAS A LEVEL SURFACE.
E. THE MATERIAL IN FRONT OF THE WALL HAS A SLOPE NO STEEPER THAN 4 HORIZONTAL TO 1 VERTICAL.
F. THE FACE OF THE WALL IS NO STEEPER THAN 1 HORIZONTAL TO 2 VERTICAL.
G. SURCHARGE LOADS BEHIND THE WALL ARE NO CLOSER THAN DISTANCE H FROM THE TOP OF WALL.

NOTES:

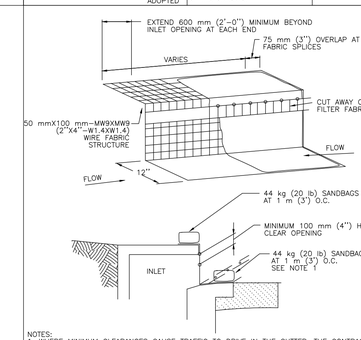
1. DESIGN AND CONSTRUCTION OF ROCK WALL SHALL CONFORM TO THE REQUIREMENTS OF CITY CODE 16-7-2 PLACEMENT OF FENCES IN STREET CORNER AREAS, AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL FOR MINIMUM SIGHT DISTANCE.
2. CONCRETE SHALL CONFORM TO ITEM 403S, "CONCRETE FOR STRUCTURES".

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE LOCATIONS	CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROPTECTION FENCE TYPE A - CHAIN LINK	DEPARTMENT OF PUBLIC WORKS	DRY STACK ROCK WALL FOR SLOPE PROTECTION
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 610S-1	RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 610S-2	RECORD COPY SIGNED BY BILL GARDNER 03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 623S-1



AREA INLET PROTECTION

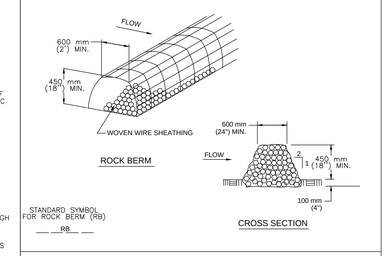
SCALE: N.T.S.



NOTES:

1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, THE CONTRACTOR MAY SUBSTITUTE A 25 mm X 100 mm (1" X 4") BOARD SECURED WITH CONCRETE NAILS 1 m (3') O.C. NAILED INTO THE GUTTER IN LIEU OF SANDBAGS TO HOLD THE FILTER DIKE IN PLACE. UPON REMOVAL, CLEAN ANY DIRT/DEBRIS FROM NAILING LOCATIONS, APPLY CHEMICAL SANDING AGENT AND APPLY NON-SHRINK GROUT FLUSH WITH SURFACE OF GUTTER.
2. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 50 mm (2").
4. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
5. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	FILTER DIKE CURB INLET PROTECTION	CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	ROCK BERM
RECORD COPY SIGNED BY J. PATRICK MURPHY 2/21/01 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 628S-2	RECORD COPY SIGNED BY MORGAN BYARS 8/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 639S-1



NOTES:

1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED,THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

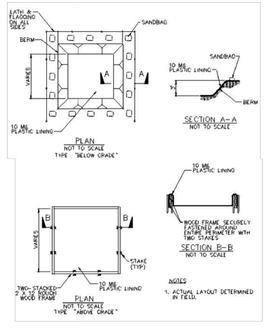
Lower Colorado River Authority
Watershed Management
Erosion and Sedimentation Control Details

Concrete Washout Areas

The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

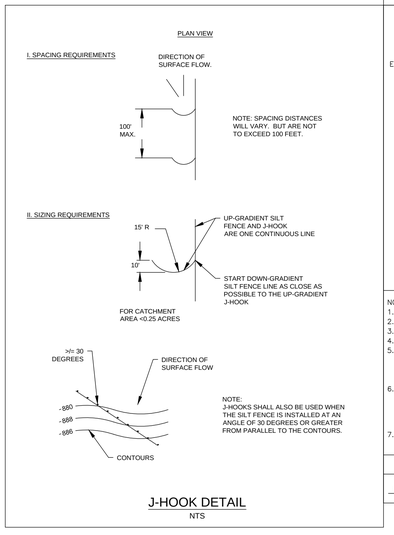
Notes:

1. Avoid mixing excess amounts of fresh concrete.
2. Perform washout of concrete trucks in designated areas only.
3. Construct washout area using 10 mil plastic lining and anchor the lining with sandbags or rocks.
4. Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. **Do not allow runoff from this area - construct a temporary pit or bermed area large enough to contain both liquid and solid waste.**
5. Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly, along with the lining.
6. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled, repaired, and revegetated or otherwise stabilized.



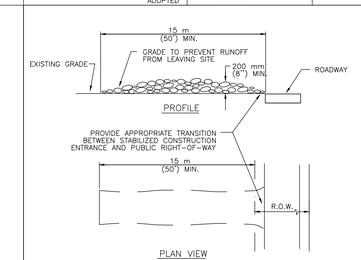
Schematics of Concrete Washout Areas

For more information, see the LCRA Water Quality Management Technical Manual
For questions or information, call LCRA at (800) 776-5272, ext. 2324 or visit www.lcra.org



J-HOOK DETAIL

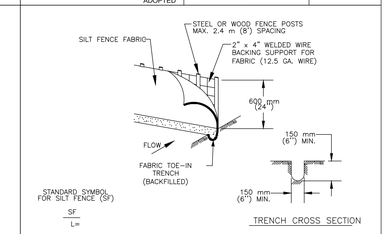
NTS



NOTES:

1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE	CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE
RECORD COPY SIGNED BY J. PATRICK MURPHY 5/23/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 641S-1	RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 642S-1



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

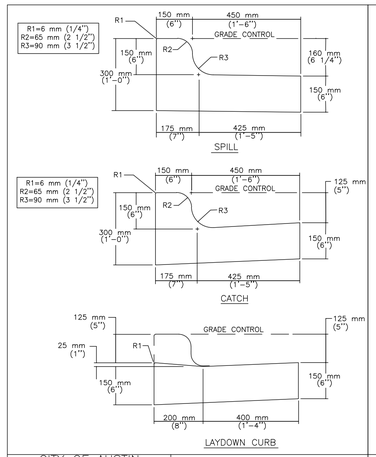
NO	DATE - DESCRIPTION

EDITED: May 12, 2015
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15-PC Carlos A. Martinez

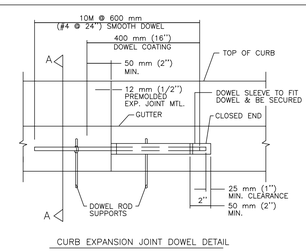
BELTERRA SECTION 20-1 & 20-2

ENVIRONMENTAL PROTECTION DETAILS

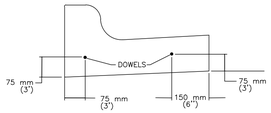
T:\Private\Vaisor\Crescent Belterra\Design\PH 1 SEC 20\Site Construction\S-CRESBELTRA_PH1_SEC20-ESD.dwg



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION		CURB AND GUTTER SECTION	STANDARD NO.
RECORD COPY SIGNED BY LINO RIVERA	9/29/99	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	430S–1
ADOPTED			



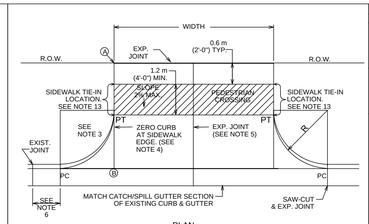
CURB EXPANSION JOINT DOWEL DETAIL



SECTION A–A

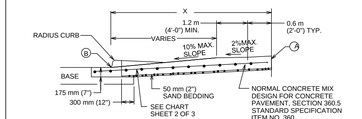
SEE STANDARD 430S–1 FOR TYPICAL CURB AND GUTTER SECTIONS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION		CURB EXPANSION JOINT DOWEL DETAIL	STANDARD NO.
RECORD COPY SIGNED BY LINO RIVERA	9/29/99	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	430S–3
ADOPTED			



PLAN

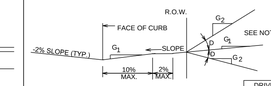
NOTE: ALL DRIVEWAYS SHALL BE SLOPED TOWARDS THE STREET FROM THE R.O.W. LINE. ELEVATION OF POINT Ⓐ ABOVE POINT Ⓑ IS, TYPICALLY A MINIMUM OF 150 mm (6") PLUS 20 mm/m (2" RISE/FOOT) OVER DISTANCE "X" IN METERS (FEET).



CROSS SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE II DRIVEWAY	STANDARD NO.
RECORD COPY SIGNED BY CUONG TRAN	02/24/10	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	433S-2 1 OF 2
ADOPTED			

USE	THICKNESS	REINFORCEMENT
DRIVEWAYS FOR PASSENGER VEHICLE PARKING LOTS	150 mm (6") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS
ALL OTHERS	175 mm (7") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS



ALLOWABLE GRADES

DRIVEWAY VOLUME (ADT)	D=GRADE CHANGE STD.	MAX
>1500	0%	3%
500-1500	3%	6%
< 500	6%	15%

NOTES:

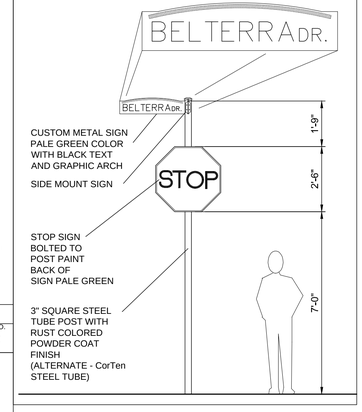
1. ALL TYPE II DRIVEWAYS SHALL HAVE RADIUS ENDS.
2. DRIVEWAY WIDTHS AND RADII DIMENSIONS, ONE/TWO WAY TRAVEL REQUIREMENTS, AND GEOMETRIC LAY-OUT ARE HIGHLY VARIABLE, SUBJECT TO SITE SPECIFIC CONDITIONS AND REQUIREMENTS. SEE TRANSPORTATION CRITERIA MANUAL, SECTION 5 "DRIVEWAYS".
3. THE DRIVEWAY EDGE SHALL BE SMOOTHLY TRANSITIONED INTO THE SIDEWALK TIE-IN LOCATION BEGINNING AT THE RADIUS PC LINE.
4. "ZERO" CURB AT PT OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST.
5. PLACE AN EXPANSION JOINT DOWN THE CENTER OF DRIVEWAY ALL DRIVEWAYS.
6. IF DIMENSION IS LESS THAN 1.5 METERS (5 FEET), REMOVE CURB AND GUTTER TO EXISTING JOINT AND POUR MONOLITHICALLY WITH DRIVEWAY.
7. IF THE BASE IS OVER-EXCAVATED WHERE THE CURB AND GUTTER WERE REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
8. TYPE II DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTERSECTING RIGHT OF WAY THAN 60% OF PARCEL FRONTAGE AT 30 METERS (100 FEET) WHICHEVER IS LESS.
9. DRIVEWAY SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
10. WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE FIRE DEPARTMENT SHALL BE CONSULTED WHERE THE DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND "G2 IS GREATER THAN 15%.
11. USE 12 MM (1/2") ASPHALT BOARD OR OTHER APPROVED MATERIAL FOR CURB AND GUTTER EXPANSION JOINTS. SIDEWALK, AT THE R.O.W. LINE AND AT MIDWIDTH, SEE NOTE 5.
12. SEE TRANSPORTATION CRITERIA MANUAL, SECTION 5 FOR OTHER DRIVEWAY REQUIREMENTS.
13. THE SIDEWALK, REGARDLESS OF ITS LOCATION WITH RESPECT TO THE CURB OR PROPERTY LINE, SHALL BE CONNECTED TO THE DRIVEWAY AT THESE LOCATIONS.
14. WATER METER BOXES AND WASTEWATER CLEAN OUTS ARE PROHIBITED FROM BEING LOCATED IN DRIVEWAY AREAS.

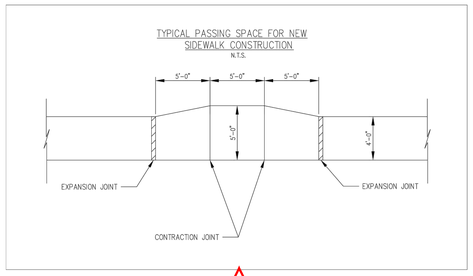
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE II DRIVEWAY	STANDARD NO.
RECORD COPY SIGNED BY CUONG TRAN	02/24/10	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	433S-2 2 OF 2
ADOPTED			

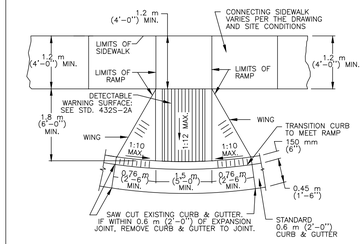
SIGN POLES - BELTERRA

STEEL SUPPORT POLES SHALL BE 3" SQUARE STEEL POSTS. TOPS CLOSED WITH BEVELED STEEL CAP WELDED IN PLACE. STEEL ANGLE SUPPORTS FOR ATTACHMENT OF SIGN BLADES TO BE WELDED PARALLEL WITH LENGTH OF STEEL POLE, WITH A 1/8" GAP BETWEEN ANGLES TO ALLOW INSERTION OF .125 ALUMINUM SIGN BLADE. EACH POLE TO HAVE SUPPORTS FOR 2 SIGN BLADES ORIENTED AT 90 DEGREES TO EACH OTHER. STEEL POLES TO BE PRIMED AND PAINTED USING MATTHEWS POLYURETHANE ENAMEL, CUSTOM COLOR MATCH FOR DURON "SEQUOIA" AS PROVIDED PREVIOUSLY BY SIGN CRAFTERS - SAN MARCOS, TX. FORMULA AVAILABLE ON REQUEST. (CONTACT AT SIGN CRAFTERS IS KAI JENSEN 512-392-0900).

SIGN POLES TO BE SET IN CONCRETE FOOTING (DIRECT BURIAL). GENERAL LOCATION OF SIGN POLES PROVIDED BY OWNER. INSTALLER TO MARK LOCATION AND COORDINATE LOCATION OF UNDERGROUND UTILITIES PRIOR TO EXCAVATION.







GENERAL NOTES:

1. RAMP WILL HAVE DETECTABLE WARNING THAT CONSISTS OF A GROOVED SURFACE WITH GROOVES 1/4" DEEP, 3/4" WIDE AND 2" SPACING.

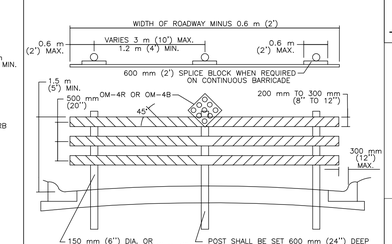
2. GROOVED SURFACE SHALL BE DIED CONCRETE OF CONTRASTING COLOR, CHOSEN BY OWNER. CONTRACTOR TO USE LITHOCHROME CHEMSTAIN COLOR CS-14 DARK WALNUT, SEALED WITH CEMENTONE CLEAR SEALER. L. M. SCOFIELD COMPANY (1-800-800-9900)

3. TYPICAL SIDEWALK WIDTHS AND CURB RADII ARE SHOWN FOR ILLUSTRATION. REFER TO APPROPRIATE DETAILS FOR SIDEWALK WIDTHS, CURB RADII AND CURB BASIS.

4. THE PERMISSIBLE CONSTRUCTION JOINT BETWEEN THE RAMP SURFACE AND THE LAYDOWN CURB SHALL BE LIMITED TO 6 mm (1/4") JOINT SIZE. GAPS LARGER THAN 6 mm (1/4") MUST BE APPROVED BY THE PROJECT MANAGER/INSPECTOR. GAPS GREATER THAN 6 mm (1/4") SHALL BE SOLID MORTAR FILLED BETWEEN THE BRICK PAVERS AND CURB UNLESS OTHERWISE INSTRUCTED BY THE PROJECT MANAGER/INSPECTOR.

5. MORTAR SHALL CONFORM TO ITEM 403.5 (6)/403.2 (6). MORTAR (GROUT). ALL OTHER CONCRETE SHALL CONFORM TO ITEM 403/403S, "CONCRETE FOR STRUCTURES" UNLESS NOTED OTHERWISE.

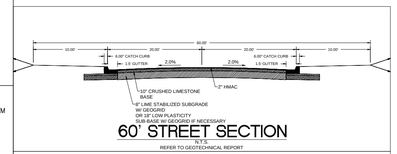
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SIDEWALK CURB RAMP
		THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.



NOTES:

1. WIDTH OF RAIL SHALL BE A MINIMUM OF 200 mm (8") AND MAY BE UP TO A MAXIMUM OF 300 mm (12"), 50 mm (2") NOMINAL SMOOTH LUMBER.
2. RAILS SHALL BE FASTENED TO EACH POST WITH 6 mm (1/4 ") STEEL BOLTS WITH WASHERS ON EACH SIDE. BOLT THREADS SHALL BE PEENED.
3. THE RAILS SHALL RECEIVE TWO COATS OF WHITE OIL BASE OUTSIDE PAINT, THEN SHALL HAVE 150 mm (6") WIDE REFLECTORIZED RED STRIPES OF TAPE PLACED ON 45 DEGREE SLOPES, DOWN AND TOWARD THE CENTER OF THE BARRICADE.
4. BARRICADES MAY BE CONSTRUCTED IN SECTIONS OR MAY BE CONTINUOUS ACROSS ROADWAY WIDTH. SPLICES ON CONTINUOUS RAIL BARRICADES SHALL BE AT POSTS, AND SHALL HAVE A 600 mm (2') SPLICE BLOCK ON BACK SIDE OF THE SAME MATERIAL AS RAIL.
5. 450 mm (18") DIAMOND REFLECTORIZED RED PANEL OR 450 mm (18") DIAMOND RED OR BLACK PANEL WITH 9–75 mm (3") DIAMETER RED REFLECTORS SYMMETRICALLY PLACED AT CENTER POSTS. A MINIMUM OF 1.2 m (4') ABOVE GROUND SHALL BE USED FOR END OF ROAD MARKERS.

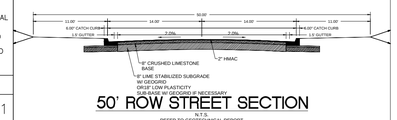
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION		STREET–END BARRICADE	STANDARD NO.
RECORD COPY SIGNED BY LINO RIVERA	9/29/99	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	803S–1
ADOPTED			



60' STREET SECTION

N.T.S.

REFER TO GEOTECHNICAL REPORT



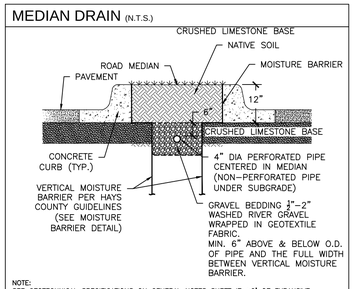
50' ROW STREET SECTION

N.T.S.

REFER TO GEOTECHNICAL REPORT

*REFER TO GEOTECHNICAL REPORT

MEDIAN DRAIN (N.T.S.)

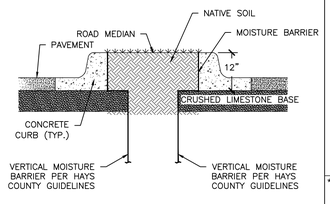


NOTE:
SEE GEOTECHNICAL SPECIFICATIONS ON GENERAL NOTES SHEET IF >2' OF EXPANSIVE SUBGRADE PI>25

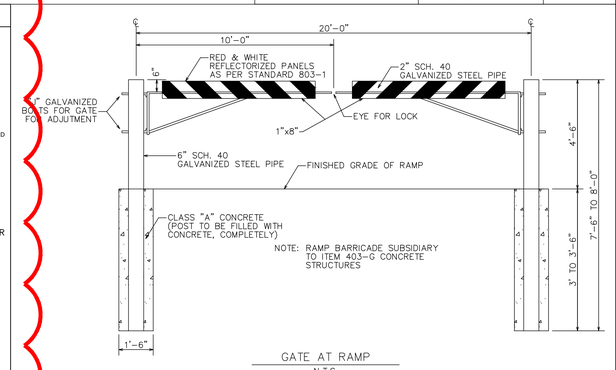
MOISTURE BARRIER GUIDELINES (N.T.S.)

MOISTURE BARRIERS DESIGN DETAILS THAT SHOULD BE CONSIDERED AS RELATED TO CONTROLLING MOISTURE FLUCTUATIONS IN THE SUBGRADE INCLUDE:

- WIDTH TO EXTENSION OF SUBGRADE STABILIZATION AND BASE LAYERS BEHIND BACK OF CURB, CURRENTLY RECOMMENDED TO BE 18 INCHES
- WIDTH TO EXTEND MOISTURE CONTROL BARRIER BEYOND BACK OF CURB OR EDGE OF PAVEMENT FOR OPEN DITCH DRAINAGE CONDITIONS, CURRENTLY RECOMMENDED TO BE 10 FEET
- HORIZONTAL MOISTURE BARRIERS SUCH AS A THICK PLASTIC SHEETING (I.E. 10 MIL BURIED ABOUT 12" TO 18" DOWN)
- USE OF VERTICAL MOISTURE BARRIERS AT BACK OF CURB TO PREVENT TREE ROOT DAMAGE TO PAVEMENT, CURRENTLY RECOMMENDED TO BE 6 FEET, SUCH AS GEOTEXTILE WITH ULTRA-LOW PERMEABILITY OR BARRIERS CONSTRUCTED FROM LOW PERMEABILITY MATERIALS LIKE A SOIL-CEMENT MIXTURE, BENTONITE CLAY MIXTURE, LOW-STRENGTH CONCRETE, OR CLSM IN A TRENCHED WALL
- MINIMUM LENGTH OF TRANSITION BETWEEN SHALEY CLAY TO COMPETENT SHALE TO PREVENT HARD SPOTS IN THE PAVEMENT, CURRENTLY RECOMMENDED TO BE TRANSITIONED BY GRADING OVER A LENGTH OF 50 FEET
- MOISTURE TREATED SUBGRADE DEPTH OF TREATMENT BASED ON SWELL TESTING



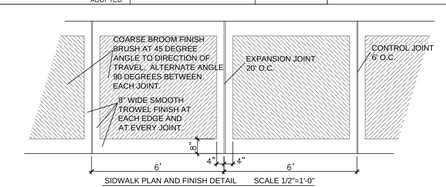
NOTE:
SEE GEOTECHNICAL SPECIFICATIONS ON GENERAL NOTES SHEET IF >2' OF EXPANSIVE SUBGRADE PI>25



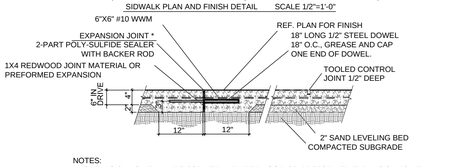
GATE AT RAMP

N.T.S.

*NOTE: ACCESS GATE DETAIL MUST BE SUBMITTED TO THE DISTRICT FOR APPROVAL PRIOR TO CONSTRUCTION.



SIDEWALK PLAN AND FINISH DETAIL SCALE 1/2"=1'-0"



NOTES:

1. EXPANSION JOINT MAY BE FORMED WITH REDWOOD OR PREFORMED EXPANSION JOINT MATERIAL. INSTALL WITH "ZIP STRIP" OR 1x1 WOOD STRIP AT SURFACE TO LEAVE A VOID FOR THE JOINT SEALER.
2. EXPANSION JOINTS ARE TO BE 20' ON CENTER UNLESS NOTED OTHERWISE ON PLAN.
3. CONTROL JOINTS ARE TO BE 5' ON CENTER UNLESS NOTED OTHERWISE ON PLAN.
4. JOINT LAYOUT AT WALK CURVES AND INTERSECTIONS SHALL BE ACCORDING TO THE LAYOUT SHOWN ON THE PLAN DOCUMENTS. VARIATIONS TO THE JOINT LAYOUT MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE. FAILURE TO GAIN APPROVAL FOR VARIATIONS MAY BE CAUSE FOR REJECTION OF WORK.

SIDEWALK DETAIL

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
10/18/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL
TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

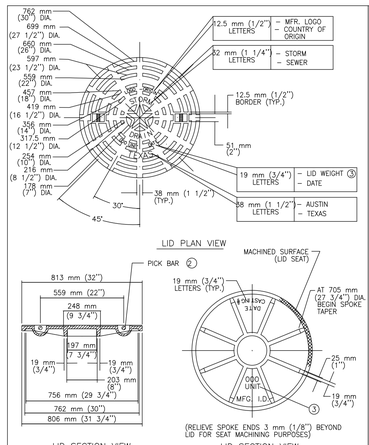
NO	DATE - DESCRIPTION
R1	2017-09-25-RELOCATE MEDIAN

EDITED: May 12, 2015
PLOTTED: October 18, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 20-1 & 20-2

STREET DETAILS

T:\Private\Master\Crescent Belterra\Design\PH 1 SEC 20\Shts Construction\S-CRESBELTRA_PH1_SEC20-STD.dwg

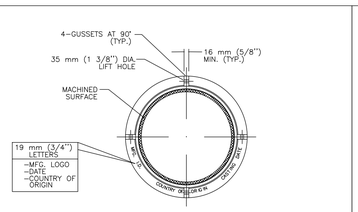


LID PLAN VIEW

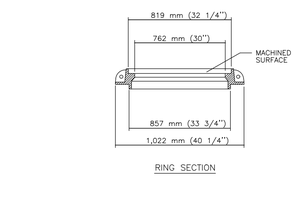
LID SECTION VIEW

LID SECTION VIEW

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STORM DRAIN MANHOLE RING AND 813 mm (32") COVER	STANDARD NO.
RECORD COPY SIGNED BY GEORGE E. OSWALD ADOPTED	2/14/02	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	503S–4S 1 OF 3

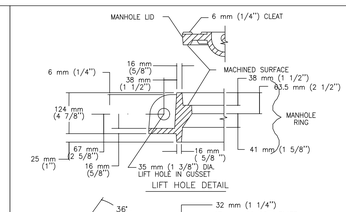


MANHOLE RING

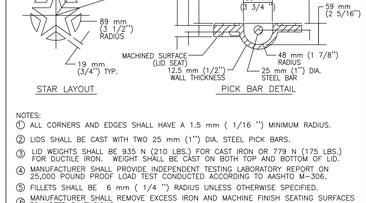


RING SECTION

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STORM DRAIN MANHOLE RING AND 813 mm (32") COVER	STANDARD NO.
RECORD COPY SIGNED BY GEORGE E. OSWALD ADOPTED	2/14/02	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	503S–4S 2 OF 3



LIFT HOLE DETAIL

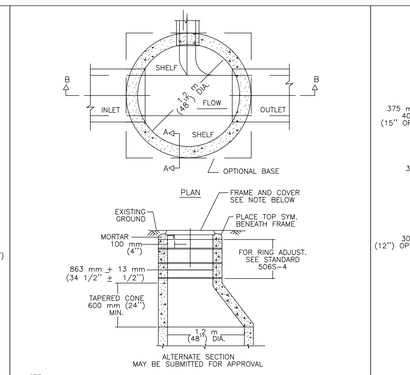


STAR LAYOUT

PICK BAR DETAIL

NOTES:
1. ALL CORNERS AND EDGES SHALL HAVE A 1.5 mm (1/16 ") MINIMUM RADIUS.
2. LIDS SHALL BE CAST WITH TWO 25 mm (1") DIA. STEEL PICK BARS.
3. LID WEIGHTS SHALL BE 935 N (210 LBS.) FOR CAST IRON OR 779 N (175 LBS.) FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTTOM TOP AND BOTTOM OF LID.
4. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 25,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M–306.
5. FILLETS SHALL BE 6 mm (1/4 ") RADIUS UNLESS OTHERWISE SPECIFIED.
6. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STORM DRAIN MANHOLE RING AND 813 mm (32") COVER	STANDARD NO.
RECORD COPY SIGNED BY GEORGE E. OSWALD ADOPTED	2/14/02	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	503S–4S 3 OF 3

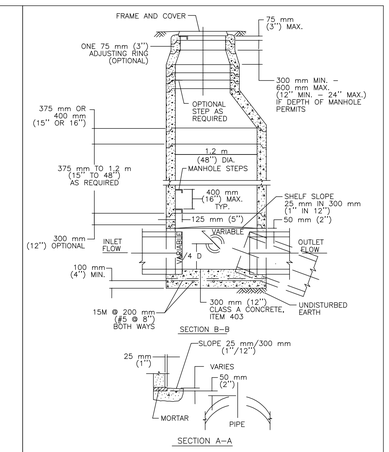


NOTE:
USE 800 mm (32") FRAME AND COVER.

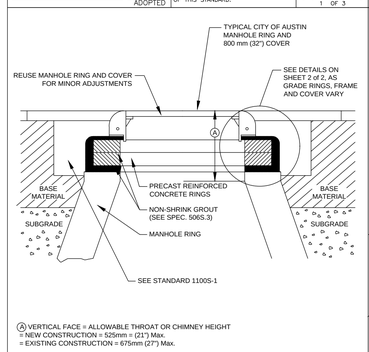
MINIMUM MANHOLE DIA.	MINIMUM PIPE SIZE
1.2 m (4')	450 TO 600 mm (18 TO 24")
1.5 m (5')	750 mm TO 1.1 m (30 TO 42")
1.8 m (6')	1.2 TO 1.4 m (48 TO 54")
2.1 m (7')	1.5 TO 1.7 m (60 TO 66")

SIZE TO BE USED IS DEPENDENT ON DRAIN ANGLES.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		PRE–CAST CONCRETE STORM DRAIN MANHOLE	STANDARD NO.
RECORD COPY SIGNED BY GEORGE E. OSWALD ADOPTED	2/14/02	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	506S–3 1 OF 2



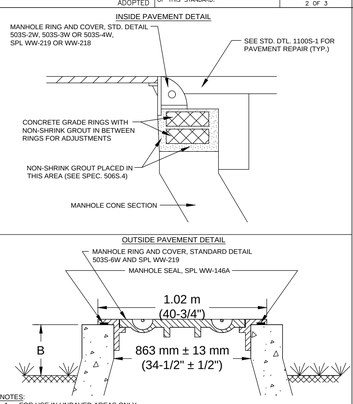
CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		PRE–CAST CONCRETE STORM DRAIN MANHOLE	STANDARD NO.
RECORD COPY SIGNED BY GEORGE E. OSWALD ADOPTED	2/14/02	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	506S–3 2 OF 2



Ⓐ VERTICAL FACE = ALLOWABLE THROAT OR CHIMNEY HEIGHT
= NEW CONSTRUCTION = 525mm = (21") Max.
= EXISTING CONSTRUCTION = 675mm (27") Max.

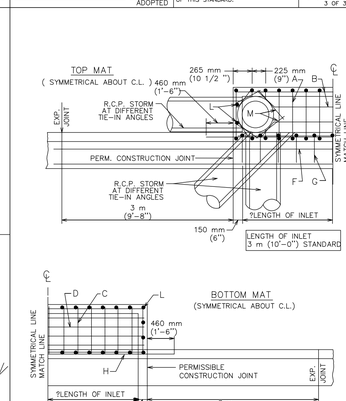
NOTES:
1. NON-SHRINK GROUT SHALL NOT EXCEED 25 mm (1") IN ANY DIMENSION.
2. SUB-GRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO ITEMS 201S AND 210S, RESPECTIVELY, OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
3. REFER TO STANDARD 1100S-1 FOR REPAIRS AROUND MANHOLES.
4. SEE STANDARD 506S-4A FOR HDPE RING INSTALLATION (FOR USE IN PAVED AREAS ONLY).

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	506S-4 1 OF 2

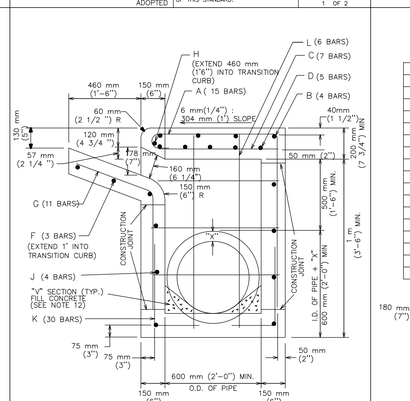


NOTES:
1. FOR USE IN UNPAVED AREAS ONLY.
2. WHEN USED WITHIN 100-YEAR FLOODPLAIN, SEE DTL. 506S-6 FOR ADDITIONAL M.H. REQUIREMENTS.
3. DIMENSION B=150-300 mm (6"-12") FOR M.H. LOCATED IN 100-YR FLOOD PLAN. =50-300 mm (2"-12") FOR M.H. OUTSIDE 100-YR FLOOD PLAN.

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	506S-4 2 OF 2



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER ADOPTED	12/09/08	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S–3 1 OF 4

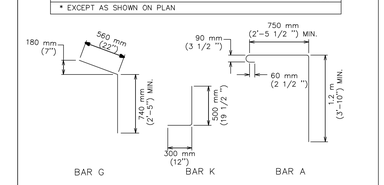


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER ADOPTED	12/09/08	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S–3 2 OF 4

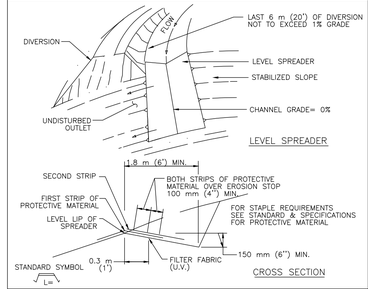
TABLE OF QUANTITIES
FOR 18" OUTLET PIPE
REINFORCING STEEL QUANTITIES

BARS	SIZE	SPACING	NUMBER	LENGTH	WEIGHT
A	4	230mm (9")*	15	2 m (7'–0")	73
B	4	250 mm (10")	4	3.25 m (10'–8")	29
C	4	460 mm (18")	7	760 mm (2'–6")	12
D	6	150 mm (6")	5	3.25 m (10'–8")	80
E	4	300 mm (12")	6	760 mm (2'–6")	10
F	4	250 mm (10")	3	4 m (13'–0")	35
G	4	300 mm (12")	11	1.25 m (4'–1")	31
H	6	—	1	4.25 m (14'–0")	20
J	4	300 mm (12")	7	3.25 m (10'–8")	50
K	4	230 mm (9")*	30	800 mm (2'–7 1/2")	52
L	4	300 mm (12")*	6	1.3 m (4'–4")	17
M	4	–	4	500 mm (1'–8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.06

* EXCEPT AS SHOWN ON PLAN

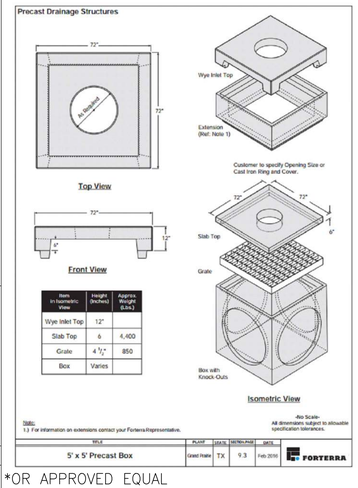


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER ADOPTED	12/09/08	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S–3 3 OF 4



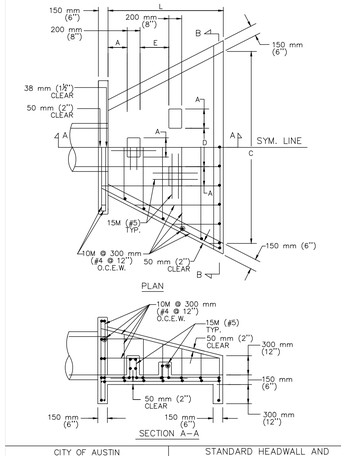
GENERAL NOTES:
1. LEVEL SPREADERS SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF THE ENGINEER.
2. CONSTRUCT LEVEL LIP ON ZERO PERCENT GRADE TO INSURE UNIFORM SPREADING OF SEDIMENT–FREE RUNOFF (CONVERTING CHANNEL FLOW TO SHEET FLOW).
3. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL (NOT ON FILL).
4. A MATTING EROSION STOP SHALL BE PLACED VERTICALLY AND AT LEAST 150 mm (6") DEEP IN A SILT TRENCH 0.3 m (1') BACK OF AND PARALLEL WITH THE LIP. THIS EROSION STOP SHALL EXTEND THE ENTIRE LENGTH OF THE LEVEL LIP AND SHALL BE TRIMMED AFTER BACKFILLING WITH TAMPED SOIL, SO THAT THE UPPER EDGE IS FLUSH WITH THE SOIL SURFACE.
5. THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING 2 STRIPS OF JUTE, EXCELSIOR OR OTHER APPROVED PROTECTIVE MATERIAL AS SHOWN ABOVE.
6. THE ENTRANCE CHANNEL SHALL NOT EXCEED A 1% GRADE FOR AT LEAST 6 m (20') BEFORE ENTERING SPREADER.
7. STORM RUNOFF CONVERTED TO SHEET FLOW SHALL OUTLET ONTO STABILIZED AREAS. WATER SHALL NOT BE RECONCENTRATED IMMEDIATELY BELOW THE POINT OF DISCHARGE.
8. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PROVIDED.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		LEVEL SPREADER	STANDARD NO.
RECORD COPY SIGNED BY J. PATRICK MURPHY ADOPTED	3/27/00	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	634S–1

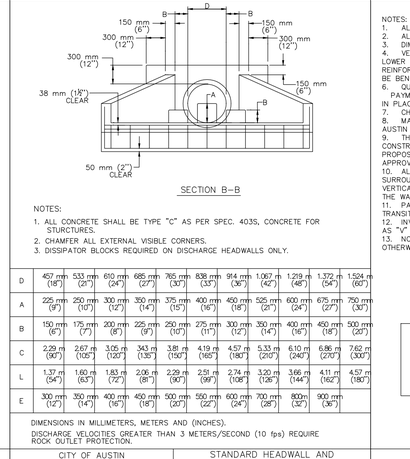


Item in Isometric View	Height (Inches)	Approx Weight (Lbs.)
Wye Inlet Top	12"	
Slab Top	6	4,400
Grate	4 5/8"	850
Box	Varies	

*OR APPROVED EQUAL



CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STANDARD HEADWALL AND ENERGY DISSIPATORS	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER ADOPTED	08/20/07	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S–13 1 OF 2



NOTES:
1. ALL CONCRETE SHALL BE TYPE "C" AS PER SPEC. 403S, CONCRETE FOR STURCTURES.
2. CHAMFER ALL EXTERNAL VISIBLE CORNERS.
3. DISSIPATOR BLOCKS REQUIRED ON DISCHARGE HEADWALLS ONLY.

D	457 mm (18")	533 mm (21")	610 mm (24")	685 mm (27")	765 mm (30")	838 mm (33")	914 mm (36")	1,067 m (42")	1,219 m (48")	1,372 m (54")	1,524 m (60")	
A	225 mm (9")	250 mm (10")	300 mm (12")	350 mm (14")	375 mm (15")	400 mm (16")	450 mm (18")	525 mm (21")	600 mm (24")	675 mm (27")	750 mm (30")	
B	150 mm (6")	175 mm (7")	200 mm (8")	225 mm (9")	250 mm (10")	275 mm (11")	300 mm (12")	350 mm (14")	400 mm (16")	450 mm (18")	500 mm (20")	
C	2.29 m (90")	2.67 m (105")	3.05 m (120")	343 m (135")	3.81 m (150")	4.19 m (165")	4.57 m (180")	5.33 m (210")	6.10 m (240")	6.86 m (270")	7.62 m (300")	
L	1.37 m (54")	1.60 m (63")	1.83 m (72")	2.06 m (81")	2.29 m (90")	2.51 m (99")	2.74 m (108")	3.20 m (126")	3.66 m (144")	4.11 m (162")	4.57 m (180")	
E	300 mm (12")	350 mm (14")	400 mm (16")	450 mm (18")	500 mm (20")	550 mm (22")	600 mm (24")	700 mm (28")	800m (32")	900 mm (36")		

DIMENSIONS IN MILLIMETERS, METERS AND (INCHES).
DISCHARGE VELOCITIES GREATER THAN 3 METERS/SECOND (10 fps) REQUIRE ROCK OUTLET PROTECTION.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STANDARD HEADWALL AND ENERGY DISSIPATORS	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER ADOPTED	08/20/07	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S–13 2 OF 2

NOTES:
1. ALL CONCRETE SHALL BE CLASS "A"
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. VERTICAL STEEL MAY BE SPLICED (380 mm or 15" MIN. LAP) IN THE LOWER ONE–HALF OF ALL INLET WALLS.5. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
6. QUANTITIES SHOWN HEREON ARE FOR THE CONTRACTOR'S INFORMATION ONLY. PAYMENT WILL BE MADE FOR EACH INLET OF THE TYPE SPECIFIED, COMPLETE IN PLACE INCLUDING MANHOLE FRAME AND OVER.
7. CHAMFER ALL EXPOSED EDGES 20 mm (3/4 ").
8. MANHOLE FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S–1.
9. THE CONTRACTOR MAY PROPOSE ALTERNATE PROCEDURES FOR THE CONSTRUCTION OF INLETS, INCLUDING PRECAST UNITS. PLANS FOR SUCH PROPOSED ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE CONSTRUCTION.
10. ALL INLET WALLS SHALL BE FORMED EXCEPT WHERE THE NATURE OF THE SURROUNDING MATERIAL IS SUCH THAT IT CAN BE TRIMMED TO A SMOOTH VERTICAL FACE. WHEN INLET WALLS ARE PLACED TO NEAT EXCAVATION LINES THE WALL THICKNESS SHALL NOT EXCEED 10 INCHES.
11. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB.
12. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE, SHAPED AS "V" SECTION
13. NO SPLICING OF REINFORCING STEEL SHALL BE PERMITTED UNLESS OTHERWISE NOTED ON THE PLANS OR PERMITTED IN WRITING BY THE ENGINEER.

REFERENCES:
FOR EXPANSION JOINT DOWEL AND DOWEL LOCATION DETAILS SEE STD. 430S–3, "CURB EXPANSION JOINT DOWEL DETAIL".
FOR 18" MANHOLE FRAME AND COVER DETAILS SEE STD. 503S–1, "18" COVER AND FRAME".

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER ADOPTED	12/09/08	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	508S–3 4 OF 4

(25) BACKFILLING (FROM CITY OF AUSTIN SPECIFICATION 510)

(A) GENERAL

SPECIAL EMPHASIS IS PLACED UPON THE NEED TO OBTAIN UNIFORM DENSITY THROUGHOUT THE BACKFILL MATERIAL. THE MAXIMUM LIFT OF BACKFILL SHALL BE DETERMINED BY THE COMPACTION EQUIPMENT SELECTED AND IN NO CASE SHALL IT EXCEED 18 INCHES, LOOSE MEASUREMENT.

NO HEAVY EQUIPMENT, WHICH MIGHT DAMAGE PIPE, WILL BE ALLOWED OVER THE PIPE UNTIL SUFFICIENT COVER HAS BEEN PLACED AND COMPACTED. ALL INTERNAL PIPE BRACING INSTALLED OR RECOMMENDED BY THE MANUFACTURER SHALL BE KEPT IN PLACE UNTIL THE PIPE BEDDING AND TRENCH BACKFILL HAVE BEEN COMPLETED OVER THE BRACED PIPE SECTION. TESTING OF THE COMPLETED BACKFILL IN STREETS AND UNDER AND AROUND STRUCTURES SHALL MEET THE SPECIFIED DENSITY REQUIREMENTS. INITIAL TESTING SHALL NOT BE AT CONTRACTOR'S EXPENSE AND SHALL CONFORM TO THE "GENERAL CONDITIONS."

(B) GENERAL CORRUGATED METAL PIPE

AFTER THE CORRUGATED METAL PIPE STRUCTURE HAS BEEN COMPLETELY ASSEMBLED ON THE PROPER LINE AND GRADE AND HEADWALLS CONSTRUCTED WHERE INDICATED; SELECTED MATERIAL FREE FROM ROCKS OVER 8 INCHES IN SIZE FROM EXCAVATION OR BORROW, AS APPROVED BY THE E/A, SHALL BE PLACED ALONG BOTH SIDES OF THE COMPLETED STRUCTURES EQUALLY, IN UNIFORM LAYERS NOT EXCEEDING 6 INCHES IN DEPTH (LOOSE MEASUREMENT), SPRINKLED IF REQUIRED AND THOROUGHLY COMPACTED BETWEEN ADJACENT STRUCTURES AND BETWEEN THE STRUCTURES AND THE SIDES OF THE TRENCH.

BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY REQUIREMENTS AS INDICATED FOR THE ADJOINING SECTIONS OF EMBANKMENT IN ACCORDANCE WITH THE GOVERNING SPECIFICATIONS THEREOF. ABOVE THE ¼ POINT OF THE STRUCTURE, THE FILL SHALL BE PLACED UNIFORMLY ON EACH SIDE OF THE PIPE IN LAYERS NOT TO EXCEED 12 INCHES, LOOSE MEASURE.

PRIOR TO ADDING EACH NEW LAYER OF LOOSE BACKFILL MATERIAL, UNTIL A MINIMUM OF 12 INCHES OF COVER IS OBTAINED OVER THE CROWN OF THE PIPE, AN INSPECTION WILL BE MADE OF THE INSIDE PERIPHERY OF THE CORRUGATED METAL STRUCTURE TO DETERMINE IF ANY FLOATING, LOCAL OR UNEQUAL DEFORMATION HAS OCCURRED AS A RESULT OF IMPROPER CONSTRUCTION METHODS.

(C) BACKFILL MATERIALS

THE E/A MAY APPROVE ANY OF THE FOLLOWING WELL GRADED MATERIALS:

1. SELECT TRENCH MATERIAL
2. SAND
3. CRUSHED ROCK CUTTINGS
4. ROCK CUTTINGS
5. FOUNDATION ROCK
6. BLASTED MATERIAL WITH FINES AND ROCK
7. CEMENT STABILIZED MATERIAL
8. BORROW

WITHIN THE 100–YEAR FLOOD PLAIN, SAND WILL NOT BE PERMITTED FOR BACKFILLING. THE E/A WILL APPROVE THE TOPSOIL FOR AREAS TO BE SEEDED OR SODDED.

(D) BACKFILL IN STREET RIGHT OF WAY

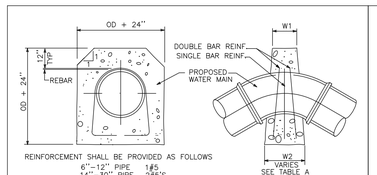
PLACEMENT OF BACKFILL UNDER EXISTING OR FUTURE PAVEMENT STRUCTURES AND WITHIN 2 FEET OF ANY STRUCTURES SHALL BE COMPACTED TO THE REQUIRED DENSITY USING ANY METHOD, TYPE AND SIZE OF EQUIPMENT, WHICH WILL GIVE THE REQUIRED COMPACTION WITHOUT DAMAGING THE PIPE OR BEDDING. PLACEMENT OF BACKFILL GREATER THAN 2 FEET BEYOND STRUCTURES IN RIGHT OF WAY SHALL BE CONFORM TO

(g) BELOW THE DEPTH OF LAYERS, PRIOR TO COMPACTION, SHALL DEPEND UPON THE TYPE OF SPRINKLING AND COMPACTING EQUIPMENT USED AND THE TEST RESULTS THEREBY OBTAINED. PRIOR TO AND IN CONJUNCTION WITH THE COMPACTION OPERATION, EACH LAYER SHALL BE BROUGHT TO THE MOISTURE CONTENT NECESSARY TO OBTAIN THE REQUIRED DENSITY AND SHALL BE KEPT LEVEL TO INSURE UNIFORM COMPACTION OVER THE ENTIRE LAYER. TESTING FOR DENSITY SHALL BE IN ACCORDANCE WITH TEST METHOD TEX–114–E AND TEST METHOD TEX–115–E.

EACH LAYER OF BACKFILL MUST PROVIDE THE DENSITY AS REQUIRED HEREIN. SWELLING SOILS (SOILS WITH PLASTICITY INDEX OF 20 OR MORE) SHALL BE SPRINKLED AS REQUIRED TO PROVIDE NOT LESS THAN OPTIMUM MOISTURE NOR MORE THAN 2 PERCENT OVER OPTIMUM MOISTURE CONTENT AND COMPACTED TO THE EXTENT NECESSARY TO PROVIDE NOT LESS THAN 95 PERCENT NOR MORE THAN 102 PERCENT OF THE DENSITY AS DETERMINED IN ACCORDANCE WITH TEST METHOD TEX–114–E AND TEST METHOD TEX–115–E. NON–SWELLING SOILS (SOILS WITH PLASTICITY INDEX LESS THAN 20) SHALL BE SPRINKLED AS REQUIRED AND COMPACTED TO THE EXTENT NECESSARY TO PROVIDE NOT LESS THAN 95 PERCENT OF THE DENSITY AS DETERMINED IN ACCORDANCE WITH TEST METHOD TEX–114–E.

AFTER EACH LAYER OF BACKFILL IS COMPLETE, TESTS MAY BE MADE BY THE E/A. IF THE MATERIAL FAILS TO MEET THE DENSITY INDICATED, THE COURSE SHALL BE REWORKED AS NECESSARY TO OBTAIN THE INDICATED COMPACTION AND THE COMPACTION METHOD SHALL BE ALTERED ON SUBSEQUENT WORK TO OBTAIN INDICATED DENSITY.

AT ANY TIME, THE E/A MAY ORDER PROOF ROLLING TO TEST THE UNIFORMITY OF COMPACTION OF THE BACKFILL LAYERS. ALL IRREGULARITIES, DEPRESSIONS, WEAK OR SOF



VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

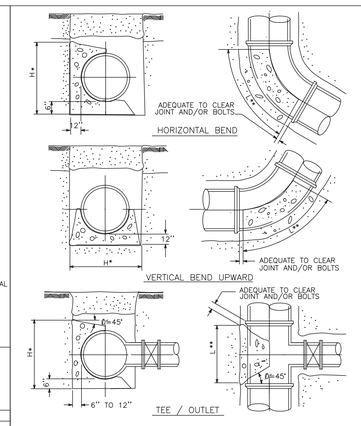
PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH W2 (in)
6"	6"	0–5	NOTE 2
		5–15	24
		15–25	48
		► 25	NOTE 1
8"	6"	0–5	NOTE 2
		5–9	30
		9–15	36
		► 15	NOTE 1
12"	6"	0–5	NOTE 2
		5–15	48
		► 15	NOTE 1
16"	12"	0–5	NOTE 2
		5–10	60
		10–15	96
		► 15	NOTE 1
24" THRU 36" DIA.		► 5.0	NOTE 1
42" THRU 48" DIA.		► 3.0	NOTE 1

NOTES:
1– FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINED JOINTS SHALL BE INSTALLED
2– FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.

THRUST BLOCK DESIGN AS FOLLOWS
A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 ℔ SURGE ALLOWANCE
B. MAXIMUM SOIL BEARING SEE TABLE BELOW

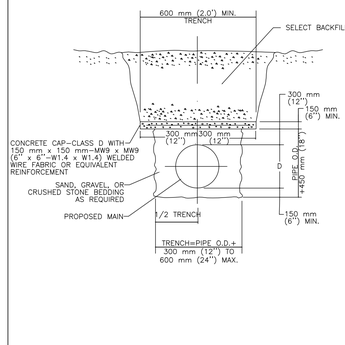
SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb/Sq.Ft.
UNDISTURBED SOIL, CALICHE	2000 Lb/Sq.Ft.
LIMESTONE ROCK	4000 Lb/Sq.Ft.

CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
CONCRETE THRUST BLOCKING
RECORD COPY SIGNED BY JAMES E. THOMPSON — APPROVED 2/11/86 DATE
ADOPTED: 2/11/86 SCALE: N.T.S. INITIAL:
STANDARD NO. 510–6 1 OF 2

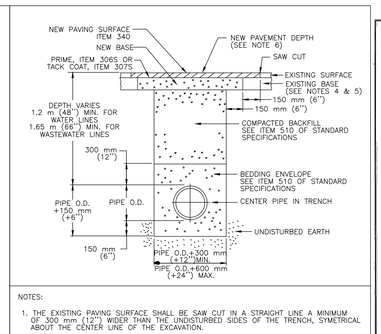


* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
CONCRETE THRUST BLOCKING
RECORD COPY SIGNED BY JAMES E. THOMPSON — APPROVED 2/11/86 DATE
ADOPTED: 2/11/86 SCALE: N.T.S. INITIAL:
STANDARD NO. 510–6 2 OF 2

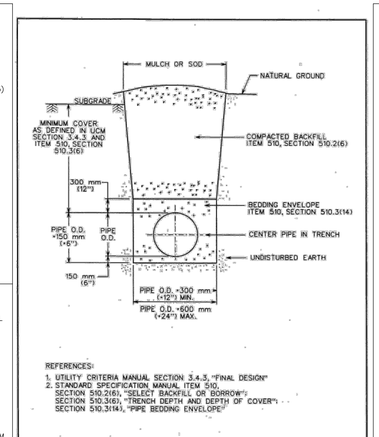


CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
CONCRETE TRENCH CAP
RECORD COPY SIGNED BY KATHI F. PAYNE — ADOPTED 2/17/00
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 510S–1



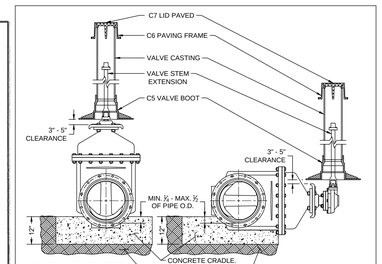
NOTES:
1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE A MINIMUM OF 300 mm (12") WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
2. CONCRETE PAVING SHALL BE SAW CUT 150 mm (6") WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX ASPHALTIC CONCRETE.
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND OF EQUAL THICKNESS, OR MINIMUM BASE THICKNESS OF 250 mm (10"), WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 200 mm (8") OF BASE OR MATCH EXISTING THICKNESS, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 50 mm (2"), WHICHEVER IS GREATER.

CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
TYPICAL TRENCH WITH PAVED SURFACE
RECORD COPY SIGNED BY KATHI L. FLOWERS — ADOPTED 8/19/02
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 510S–3



REFERENCES:
1. UTILITY CRITERIA MANUAL SECTION 3.4.3, "FINAL DESIGN"
2. STANDARD SPECIFICATION MANUAL ITEM 510, SECTION 510.2(6), "SELECT BACKFILL OR BORROW"; SECTION 510.3(6), "TRENCH DEPTH AND DEPTH OF COVER"; SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
3/3/06 ADOPTED
TYPICAL TRENCH DETAIL WITH UNFINISHED SURFACE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 510S–5



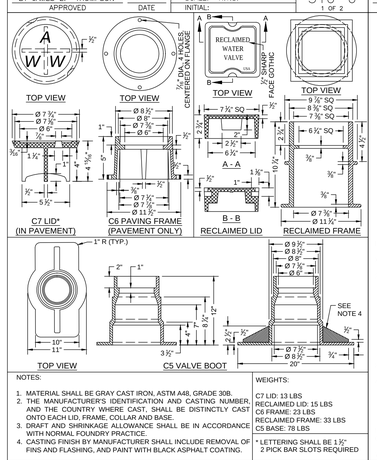
VERTICAL VALVE

HORIZONTAL VALVE
ONLY TO BE USED WHEN CALLED OUT ON THE DRAWINGS.

NOTES:
1. WELD SOCKET 2½" x 2" DEEP TO 1" SCH. 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT. [SCH. 80 FOR LENGTHS OVER 10'.]
2. VALVE CASTING SHALL BE 6" DI PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE STEM EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 2' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE **"RECLAIMED WATER"** CAST INTO THEM.

CITY OF AUSTIN
AUSTIN WATER
TYPICAL GATE VALVE 4" - 16"
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-01 1 OF 4

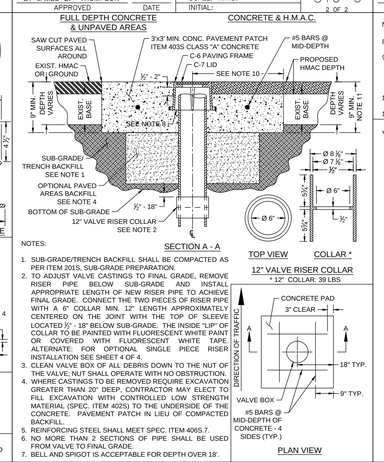


NOTES:
1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID, FRAME, COLLAR AND BASE.
3. DRAFT AND SHRINKAGALLIWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. CASTING FINISH BY MANUFACTURER SHALL INCLUDE REMOVAL OF FINS AND FLASHING, AND PAINT WITH BLACK ASPHALT COATING.

WEIGHTS:
C7 LID: 13 LBS
RECLAIMED LID: 15 LBS
C6 FRAME: 23 LBS
RECLAIMED FRAME: 33 LBS
C5 BASE: 78 LBS

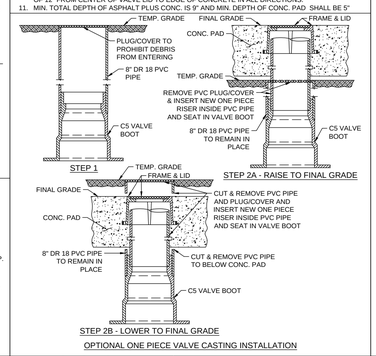
* LETTERING SHALL BE 1½" 2 PICK BAR SLOTS REQUIRED

CITY OF AUSTIN
AUSTIN WATER
TYPICAL GATE VALVE 4" - 16"
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-01 2 OF 4



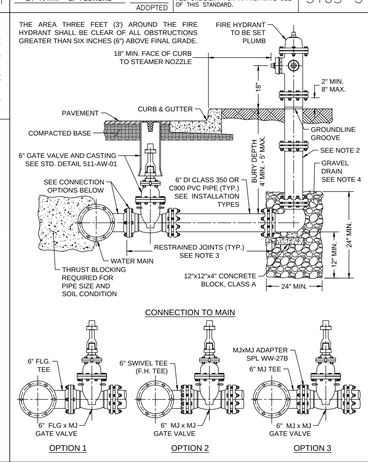
NOTES:
1. SUB-GRADE/TRENCH BACKFILL SHALL BE COMPACTED AS PER ITEM 201S, SUB-GRADE PREPARATION.
2. TO ADJUST VALVE CASTINGS TO FINAL GRADE, REMOVE RISER PIPE BELOW SUB-GRADE AND INSTALL APPROPRIATE LENGTH OF NEW RISER PIPE TO ACHIEVE FINAL GRADE. CONNECT THE TWO PIECES OF RISER PIPE WITH A 6" COLLAR MIN. 12" LENGTH APPROXIMATELY CENTERED ON THE JOINT WITH THE TOP OF SLEEVE LOCATED ½" - 18" BELOW SUB-GRADE. THE INSIDE "UP" OF COLLAR TO BE PAINTED WITH FLUORESCENT WHITE PAINT OR COVERED WITH FLUORESCENT WHITE TAPE. ALTERNATE: FOR OPTIONAL SINGLE PIECE RISER INSTALLATION SEE SHEET 4 OF 4.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE NUT OF THE VALVE; NUT SHALL OPERATE WITH NO OBSTRUCTION.
4. WHERE CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL (SPEC. ITEM 402S) TO THE UNDERSIDE OF THE CONCRETE. PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
5. REINFORCING STEEL SHALL MEET SPEC. ITEM 406S.7.
6. NO MORE THAN 2 SECTIONS OF PIPE SHALL BE USED FROM VALVE TO FINAL GRADE.
7. BELL AND SPIGOT IS ACCEPTABLE FOR DEPTH OVER 18'.

CITY OF AUSTIN
AUSTIN WATER
TYPICAL GATE VALVE 4" - 16"
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-01 3 OF 4

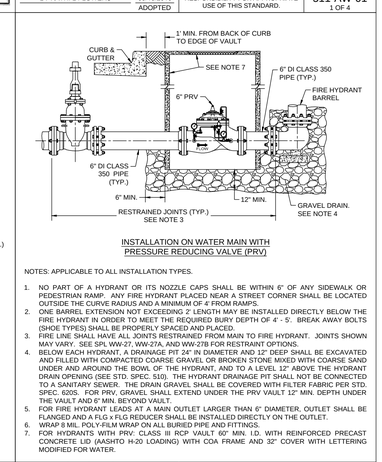


NOTES (CONT):
8. PAVING FRAME SHALL BE FLUSH WITH THE CONC. PAD AND PLACED ½" - 2" ABOVE RISER PIPE (FRAME SHALL NOT REST ON RISER.)
9. IN UNPAVED AREAS, INSTALL ONE DELINEATOR STAKE IMMEDIATELY ADJACENT TO THE EDGE OF THE CONCRETE PAD. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER AND SHALL EXTEND AT LEAST 4" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES.
10. VALVE SHALL TYPICALLY BE CENTERED IN CONCRETE DIAMOND BUT MAY BE OFFSET WITH A MIN. OF 12" FROM CENTER OF VALVE LID TO EDGE OF CONCRETE IN ALL DIRECTIONS.
11. MIN. TOTAL DEPTH OF ASPHALT PLUS CONC. IS 9" AND MIN. DEPTH OF CONC. PAD SHALL BE 5"

CITY OF AUSTIN
AUSTIN WATER
TYPICAL GATE VALVE 4" - 16"
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-01 4 OF 4



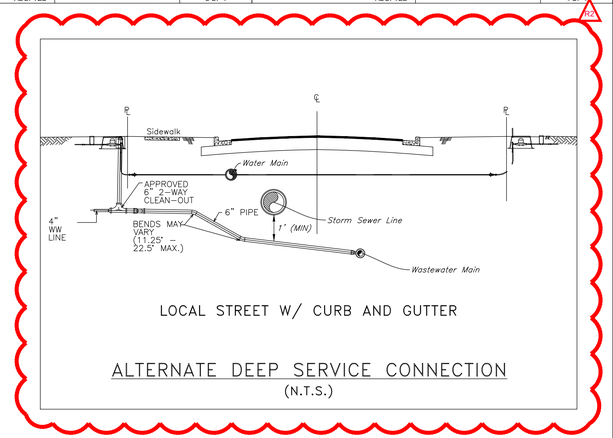
CITY OF AUSTIN
AUSTIN WATER
FIRE HYDRANT
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-02 1 OF 3



CITY OF AUSTIN
AUSTIN WATER
FIRE HYDRANT
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-02 2 OF 3

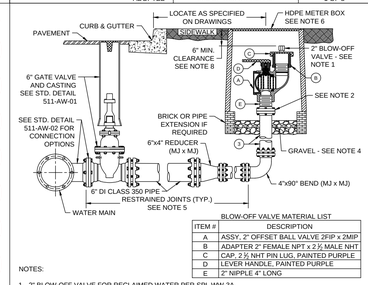
NOTES: APPLICABLE TO ALL INSTALLATION TYPES.
1. NO PART OF A HYDRANT OR ITS NOZZLE CAPS SHALL BE WITHIN 6" OF ANY SIDEWALK OR PEDESTRIAN RAMP. ANY FIRE HYDRANT PLACED NEAR A STREET CORNER SHALL BE LOCATED OUTSIDE THE CURVE RADIUS AND A MINIMUM OF 4' FROM RAMPS.
2. ONE BARREL EXTENSION NOT EXCEEDING 2' LENGTH MAY BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT IN ORDER TO MEET THE REQUIRED BURY DEPTH OF 4' - 5'. BREAK AWAY BOLTS (SHOE TYPES) SHALL BE PROPERLY SPACED AND PLACED.
3. FIRE LINE SHALL HAVE ALL JOINTS RESTRAINED FROM MAIN TO FIRE HYDRANT. JOINTS SHOWN MAY VARY. SEE SPL WW-27, WW-27A, AND WW-27B FOR RESTRAINT OPTIONS.
4. BELOW EACH HYDRANT, A DRAINAGE PIT 24" IN DIAMETER AND 12" DEEP SHALL BE EXCAVATED AND FILLED WITH COMPACTED COARSE GRAVEL OR BROKEN STONE MIXED WITH COARSE SAND UNDER AND AROUND THE BOWL OF THE HYDRANT, AND TO A LEVEL 12" ABOVE THE HYDRANT DRAIN OPENING (SEE STD. SPEC. 510). THE HYDRANT DRAINAGE PIT SHALL NOT BE CONNECTED TO A SANITARY SEWER. THE DRAIN GRAVEL SHALL BE COVERED WITH FILTER FABRIC PER STD. SPEC. 620S. FOR PRV, GRAVEL SHALL EXTEND UNDER THE PRV VAULT 12" MIN. DEPTH UNDER THE VAULT AND 6" MIN. BEYOND VAULT.
5. FOR FIRE HYDRANT LEADS AT A MAIN OUTLET LARGER THAN 6" DIAMETER, OUTLET SHALL BE FLANGED AND A FLG x FLG REDUCER SHALL BE INSTALLED DIRECTLY ON THE OUTLET.
6. WRAP 8 MIL. POLY-FILM WRAP ON ALL BURIED PIPE AND FITTINGS.
7. FOR HYDRANTS WITH PRV: CLASS III RCP VAULT 60" MIN. I.D. WITH REINFORCED PRECAST CONCRETE LID (AASHTO H-20 LOADING) WITH COA FRAME AND 32" COVER WITH LETTERING MODIFIED FOR WATER.

CITY OF AUSTIN
AUSTIN WATER
FIRE HYDRANT
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-02 3 OF 3



LOCAL STREET W/ CURB AND GUTTER

ALTERNATE DEEP SERVICE CONNECTION
(N.T.S.)



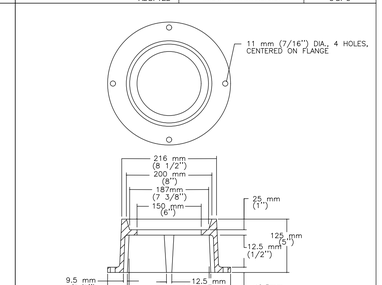
BLOW-OFF VALVE MATERIAL LIST

ITEM #	DESCRIPTION
A	ASSY, 2" OFFSET BALL VALVE 2FIP x 2MIP
B	ADAPTER 2" FEMALE NPT x 2½ MALE NHT
C	CAP, 2 ½ NHT PIN LUG, PAINTED PURPLE
D	LEVER HANDLE, PAINTED PURPLE
E	2" NIPPLE 4" LONG

NOTES:
1. 2" BLOW-OFF VALVE FOR RECLAIMED WATER PER SPL WW-3A.
2. 2"x9" 125# REDUCING COMPANION FLANGE (MANUFACTURED BY SMITH-COOPER INTERNATIONAL OR EQUIVALENT.)
3. 4" DI CLASS 350 PIPE (PE x FLG).
4. 6" MIN. DEPTH COMPACTED COARSE GRAVEL OR BROKEN STONE.
5. BLOW-OFF VALVE SHALL HAVE ALL JOINTS RESTRAINED FROM MAIN TO BLOW-OFF VALVE. JOINTS SHOWN MAY VARY. SEE SPL WW-27, WW-27A, AND WW-27B FOR RESTRAINT OPTIONS.
6. HDPE METER BOX SHALL BE RECTANGULAR, COMMERCIAL METER BOX FOR RECLAIMED WATER PER SPL WW-145A.
7. METER BOX AND BLOW-OFF VALVE SHALL NOT BE LOCATED IN A SIDEWALK, DRIVEWAY, PEDESTRIAN WAY OR TRAFFIC WAY. BLOW-OFF VALVES SHALL BE LOCATED AS SHOWN ON APPROVED PLANS.
8. BLOW-OFF VALVE MUST BE FREE TO MOVE VERTICALLY WITHIN THE METER BOX, IN ORDER TO PREVENT THE TRANSMISSION LOADS TO THE BLOW-OFF VALVE.

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE **"RECLAIMED WATER"** CAST INTO THEM.

CITY OF AUSTIN
AUSTIN WATER
2" NON - TRAFFIC RATED, RECLAIMED BLOW-OFF VALVE
RECORD COPY SIGNED BY KATHI L FLOWERS — ADOPTED 05/18/2016
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511-AW-06 1 OF 1



NOTES:
1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. TYPICAL FILLET IS 4.8 mm (3/16 ") RADIUS
3. LETTERING SHALL BE 38 mm (1 1/2 ") HEIGHT AND LOCATED AS SHOWN.
4. THIS LID REQUIRES TWO (2) PICK SLOTS.
5. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORD WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINS AND FLASHING; PAINT WITH BLACK ASPHALT COATING,
8. WEIGHT: APPROXIMATELY 6 kg (13 lbs).

CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
VALVE BOX CASTING C–7 LID
RECORD COPY SIGNED BY KATHI F. PAYNE — ADOPTED 4/5/99
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511S–12

NOTES:
1. MATERIALS SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION & CASTING NUMBER & THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH RING.
3. DRAFT & SHRINKAGE ALLOWANCE SHALL BE IN ACCORD WITH NORMAL FOUNDRY PRACTICE.
4. FINISH BY REMOVING FINS & FLASHING; PAINT WITH BLACK ASPHALT COATING.
5. WEIGHT: APPROXIMATELY 10.5 kg (23 lbs).

CITY OF AUSTIN
WATER AND WASTEWATER UTILITY
VALVE BOX CASTING C–6 PAVING RING
RECORD COPY SIGNED BY KATHI F. PAYNE — ADOPTED 4/5/99
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 511S–14

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
11/21/16

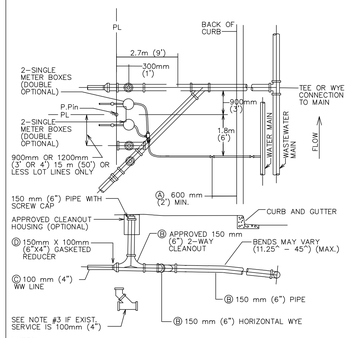
Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:
AUSTIN SPATIAL
TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONT



NOTES:

Ⓐ THESE DIMENSIONS MAY BE INCREASED BY WIDTH OF WALK IF WALK IS LOCATED AT CURB.

Ⓑ TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION.

Ⓒ BUILDING INSPECTION DEPARTMENT SHALL INSPECT CUSTOMER'S WASTEWATER LINE, EXCEPT CONNECTION AT WYE, AND WATER LINE TO CUSTOMER'S SHUT-OFF-VALVE.

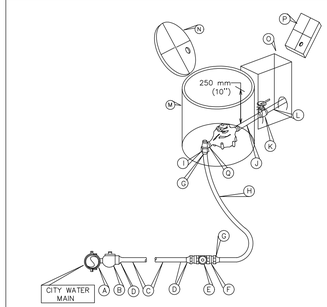
Ⓓ TAPS INSPECTION OFFICE INSPECTS CONNECTIONS OF CUSTOMER'S WATER AND WASTEWATER LINES TO CITY SYSTEMS.

NOTES:

1. DURING SUBDIVISION CONSTRUCTION UTILITY CONTRACTOR INSTALLS WASTEWATER CONNECTION TO MAIN. 150mm (6") STUB WITH HORIZONTAL WYE FOR DOUBLE SERVICES, 150mm (6") SERVICE BRANCH WITH 2-WAY-CLEANOUT(S) AND RISER FOR CLEANOUT(S) (CAPPED), AND PLUG(S) FOR 2-WAY-CLEANOUT(S) AT PROPERTY LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 1% (.264mm (1/8") PER FOOT) MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 1.22m (4'). OTHERWISE THE INSTALLED DEPTH WILL TYPICALLY BE 1.22m (4') TO 1.8m (6'). IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL 520-6. UTILITY CONTRACTOR ALSO INSTALLS WATER CONNECTION TO MAIN WATER PIPE, FITTINGS AND VALVES INCLUDING STOP VALVE-REFER TO DETAIL 520S-7 AND 9 FOR LOCATION OF STOP VALVES. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY CITY OF AUSTIN CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER REMOVES PLUG FROM 2-WAY-CLEANOUT AT PROPERTY LINE, INSTALLS 150mm X 100mm (6" X 4") ELASTOMERIC GASKETED BELL REDUCER (SPL WW-27-B). A BUSHING WILL NOT BE ALLOWED. AS AN ALTERNATE, CUSTOMER MAY INSTALL MINIMUM 450MM (18") LENGTH OF 150mm (6") PIPE, INSTALL 100 mm (4") WASTEWATER LINES, EXTEND 100mm (4") PIPE 150mm (6") MINIMUM INTO 150mm (6") PIPE AND JOINT WITH FLEXIBLE ADAPTER (SPL WW-354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE FLEXIBLE ADAPTER. BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM. CUSTOMER ALSO INSTALLS WATER LINES INCLUDING FITTINGS AND VALVES ON BOTH SIDES OF METER, INSTALL METER BOXES AND COVERS. ALL IN ACCORDANCE WITH INFORMATION ON APPLICABLE STANDARD DRAWING. A VENTED SPACER MAY BE USED TO ASSURE PROPER SPACING AND ALIGNMENT OF METER FITTINGS.
3. IF EXISTING WASTEWATER SERVICE IS 100mm (4"), CUSTOMER SHALL INSTALL A 100mm (4") ELASTOMERIC GASKETED WYE AND VERTICAL 45 DEGREE BEND IN PLACE OF THE 2-WAY CLEANOUT.
4. IF EXISTING SERVICE IS NOT PVC, THE CUSTOMER SHALL INSTALL A FLEXIBLE ADAPTER (SPL WW-354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE ADAPTER TO TRANSITION TO PVC. THE SUPPORT BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER.
5. CUSTOMER IS RESPONSIBLE FOR METER BOX AND PIPING SYSTEM UNTIL METER IS INSTALLED AND WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO CITY SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL VALVES AND STOPS, METER BOX AND 2-WAY-CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
6. CITY OF AUSTIN ACTIVITY IS LIMITED TO INSTALLATION OF THE WATER METER AND INSPECTION OF CONNECTIONS TO THE CITY'S WATER AND WASTEWATER SYSTEMS. FOR MAINTENANCE PURPOSES, THE CITY'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WATER CUT-OFF VALVE AND AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY-CLEANOUT.
7. PIPING AND TUBING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION SECTION 510.3 (14); MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B); BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESES AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 1.07m (42"). ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.
8. NO METER BOX OR CLEAN OUT SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM AUSTIN WATER UTILITY.

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-3 1 OF 2

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-3 2 OF 2



METER BOX DIMENSION			
	Inside Dia.	Outside Dia.	Ht.
Top Dia.	450 mm (18")	600 mm (24")	363 mm (14½")
Bot. Dia.	550 mm (22")	650 mm (26")	

METER SIZE	LENGTH
16 mm (⅝")	194 mm (7⅝")
19 mm (¾")	225 mm (9")
25 mm (1")	275 mm (11")

MATERIAL LIST

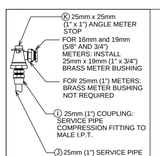
A. SERVICE CLAMP REQUIRED ON ALL PLASTIC AND ASBESTOS CEMENT PIPE AND ON ALL IRON PIPE 300 mm (12") AND SMALLER
B. 38 mm (1 1/2) CORPORATION STOP-SERVICE PIPE OUTLET. SPL #WW68
C. 38 mm (1 1/2) SERVICE PIPE
D. 38 mm (1 1/2) COUPLING: SERVICE PIPE TO MALE I.P.T. (COMPRESSION FITTING)
E. 38 mm (1 1/2) BALL VALVE. SEE SPL WW 275.
F. BRONZE BUSHING, 38 mm X 25 mm (1 1/2" X 1") I.P. THREADS
G. 25 MM (1") COUPLING: SERVICE PIPE TO MALE I.P.T. (COMPRESSION FITTING)
H. 25 mm (1") SERVICE PIPE
I. ANGLE METER STOP: SERVICE PIPE INLET X SWIVEL COUPLING NUT OUTLET AND BRASS BUSHING:
-FOR 16 mm AND 19 mm (⅝" AND ¾") METERS: 25 mm X 19 mm (1" x ¾")
-FOR 25 mm (1") METERS, 25 mm X 25 mm (1" X 1") AND 25 mm X 19 MM (1" X¾") BRASS BUSHING.
A 25 mm X 19 mm (1" x ¾") METER BUSHING IS REQUIRED AT THE ANGLE STOP TO BE INSTALLED BY PLUMBER FOR ALL 16 mm (⅝") AND 19 mm (¾") METERS. SPL WW-68.
J. WATER METER COUPLING: MALE I.P.T. X SWIVEL COUPLING NUT:
-FOR 16 mm AND 19 mm (⅝" AND ¾") METERS: 19 mm X 213 mm (¾" X 8⅜") LONG
-FOR 25 mm (1") METERS: 25 mm X 213 mm (1" X 8⅜") LONG
K. BALL VALVE. SEE SPL WW 276. 19 mm OR 25 mm (¾" OR 1 ") (PROPERTY OWNER'S CUT-OFF VALVE)
L. 19 mm OR 25 mm (¾" OR 1") PIPE MEETING CITY OF AUSTIN PLUMBING CODE REQUIREMENTS
M. METER BOX PER STANDARD PRODUCTS LIST- SPL WW-145 OR WW-145A.
N. METAL LID-FOR METER BOX, AUSTIN PIPE AND SUPPLY CO. OR APPROVED EQUAL; OR LID FURNISHED WITH APPROVED BOX. FOR VALVE BOX, TYLER PIPE, WESTERN IRON WORKS OR APPROVED EQUAL.
O. PROPERTY OWNER'S CUT-OFF VALVE BOX-RETANGULAR PLASTIC BOX, DFW #D1200 OR EQUAL.
P. RECTANGULAR PLASTIC BOX LID, DFW #D1200, 300 mm X 425 mm X 300 mm (12" X 17" X 12") OR EQUAL.
Q. ANGLE METER STOP: SERVICE PIPE INLET X SWIVEL COUPLING NUT OUTLET:
-FOR 16 mm AND 19 mm (⅝" AND ¾") METERS: 25 mm X 19 mm (1" X ¾")
-FOR 25 mm (1") METERS: 25 mm X 25 mm (1" X 1")

NOTES:

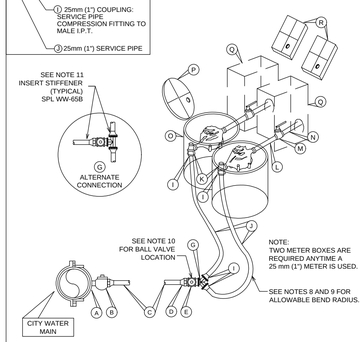
1. SERVICE PIPE SHALL BE COPPER TUBE SIZE. IT SHALL BE ANNEALED SEAMLESS TYPE "K" COPPER TUBING MEETING THE CURRENT ASTM B88 STANDARD WITH NO SWEAT OR SOLDERED JOINTS.
2. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 0.2 mm (8 MIL) POLYETHYLENE FILM.
3. TOP OF BOXES SHOULD BE 25 mm (1") ABOVE GROUND OR FLUSH WITH PAVEMENT SURFACE.
4. PIPING AND TUBING IN STREET RIGHT-OF-WAY SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY SECTION 510.3 (14) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS: BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED BY SECTION 510.3 (25).
5. BOX MUST BE BEHIND CURB NEXT TO PROPERTY LINE AND/OR SIDEWALK AND OUT OF VEHICULAR TRAFFIC AREA.
6. IF POLYETHYLENE TUBING IS USED, SEE STANDARD #520-14, P.E. WATER SERVICE CASING DETAIL, COMPRESSION FITTING REQUIRED WITH STEEL PIPE STIFFNER INSERT.

CITY OF AUSTIN AUSTIN WATER UTILITY		STANDARD INSTALLATION FOR A 16mm, 19mm OR 25mm (⅝",¾" OR 1") METER	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-11 1 OF 2

CITY OF AUSTIN AUSTIN WATER UTILITY		STANDARD INSTALLATION FOR A 16mm, 19mm OR 25mm (⅝",¾" OR 1") METER	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-11 2 OF 2



CITY RESPONSIBILITY ENDS ON THE CUSTOMER SIDE OF THE METER BOX



NOTE:
TWO METER BOXES ARE REQUIRED ANYTIME A 25 mm (1") METER IS USED.

SEE NOTES 8 AND 9 FOR ALLOWABLE BEND RADIUS.

MATERIAL LIST

Ⓐ SERVICE CLAMP REQUIRED ON ALL PLASTIC AND ASBESTOS CEMENT PIPE AND ON ALL IRON PIPE 300 mm (12") AND SMALLER.
Ⓑ 50mm (2") CORPORATION STOP-MALE THREAD INLET BY COMPRESSION OUTLET, SPL WW-68
Ⓒ 50mm (2") SERVICE TUBING PER SPL WW-65
Ⓓ COUPLING: 50mm (2") COMPRESSION TO 38mm (1-1/2") MALE I.P.T.
Ⓔ 38mm (1-1/2") BALL VALVE; SEE SPL WW-275 AND NOTE 10.
Ⓕ N/A
Ⓖ 38mm (1-1/2") x 25mm (1") BRONZE WYE. SPL WW-68 OR TEE (ALTERNATE CONNECTION)
Ⓗ N/A
Ⓘ 25mm (1") COUPLING: SERVICE TUBING TO MALE I.P.T. (COMPRESSION FITTING) W/STIFFENER PER SPL WW-65B
Ⓙ 25mm (1") SERVICE TUBING
Ⓚ 25mm (1") ANGLE METER STOP; SERVICE TUBING INLET x SWIVEL COUPLING NUT OUTLET, AND 25mm x 19mm (1" x 3/4") BRASS BUSHING. A 25mm x 19mm (1" x 3/4") METER BUSHING IS REQUIRED AT THE ANGLE STOP TO BE INSTALLED BY PLUMBER FOR ALL 16mm (5/8") AND 19mm (3/4") METERS. SPL WW-68
Ⓛ WATER METER COUPLING: MALE I.P.T. x SWIVEL COUPLING NUT:
-FOR 16mm AND 19mm (5/8" AND 3/4") METERS: 19mm x 213mm (3/4"x8-1/2") LONG
-FOR 25mm (1") METERS: 25mm x 213mm (1" x 8-1/2") LONG
Ⓜ CUSTOMER BALL VALVE 25mm (1") SEE SPL WW-276.
Ⓝ 25mm (1") TUBING MEETING CITY OF AUSTIN PLUMBING CODE REQUIREMENTS
Ⓞ METER BOX PER SPL WW-145 OR WW-145A
Ⓟ AMRAM READY LID-FOR METER BOX FURNISHED WITH APPROVED BOX.
Ⓠ RECTANGULAR BOX FOR CUSTOMER'S CUT-OFF VALVE AND PRV (WHEN REQ'D.) 300mm x 425mm x 300mm (12"x17"x12") OR EQUAL. SIZE MAY VARY WITH PRV AND SHOULD BE SIZED FOR OPERATION OF BALL VALVE. SEE SPL WW-145A.
Ⓡ RECTANGULAR PLASTIC BOX LID, 300mm x 425mm x 300mm (12" x 17" x 12") OR EQUAL. SEE SPL WW-145A.

NOTES:

1. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 0.2 mm (8 MIL) POLYETHYLENE FILM.
2. BRANCH CONNECTION AND BOTH ANGLE METER STOPS MUST BE INSTALLED PRIOR TO FIRST METER INSTALLATION EVEN THOUGH SECOND PROPERTY MAY NOT BE READY FOR SERVICE.
3. TOP OF BOXES SHOULD BE 25mm (1") ABOVE GROUND OR FLUSH WITH PAVEMENT SURFACE.
4. PIPING AND TUBING IN STREET RIGHT-OF-WAY SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY SECTION 510.3 (14) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS: BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED BY SECTION 510.3 (25).
5. BOX MUST BE BEHIND CURB NEXT TO PROPERTY LINE AND/OR SIDEWALK AND OUT OF VEHICULAR TRAFFIC AREA.
6. INSTALL METALLIC WARNING TAPE MIN. 1' ABOVE P.E. TUBING FROM TAP CONNECTION TO METER.
7. TUBING SHALL BE PLACED SO THAT IT IS RELAXED AND "SNAKES" LOOSELY IN THE TRENCH.
8. TUBING, WHEN BENT, SHALL HAVE A RADIUS NO SMALLER THAN THE VALUE SHOWN IN TABLE 1.
9. IF A FITTING WILL BE INSTALLED WITHIN A BENT SECTION OF TUBING, THE TUBING SHALL SHALL HAVE A RADIUS NO SMALLER THAN THE VALUE SHOWN IN TABLE 2.
10. B.V. (E) SHALL NOT BE LOCATED UNDER CURB OR PAVEMENT, AND NOT BE LOCATED MORE THAN 600mm (24") HORIZONTALLY FROM METER BOX OR 900mm (36") BELOW FINAL GRADE.
11. INSERT STIFFENERS FOR P.E. TUBING PER SPL WW-65B TO BE INSTALLED INSIDE TUBING AT ALL COMPRESSION FITTINGS.

TABLE 1 (SEE NOTE 8)	
Nominal Tubing Dia.	Bend Radius of at Least
25mm (1")	0.9m (3')
38mm (1-1/2")	1.2m (4')
50mm (2")	1.5m (5')

TABLE 2 (SEE NOTE 9)	
Nominal Tubing Dia.	Bend Radius of at Least
25mm (1")	3.66m (12')
38mm (1-1/2")	4.86m (16')
50mm (2")	6.06m (20')

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 1 OF 3

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 2 OF 3

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 3 OF 3

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

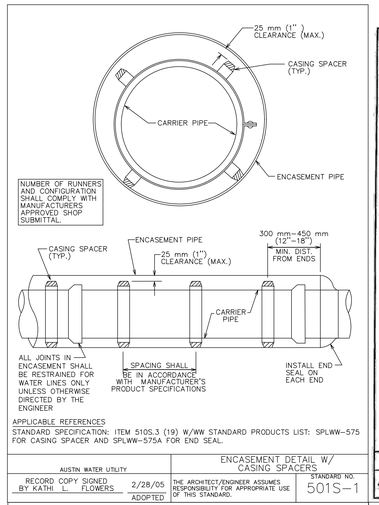
NO	DATE - DESCRIPTION

EDITED: May 12, 2015
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15-PC Carlos A. Martinez

BELTERRA SECTION 20-1 & 20-2

WATER DETAILS 2 OF 2

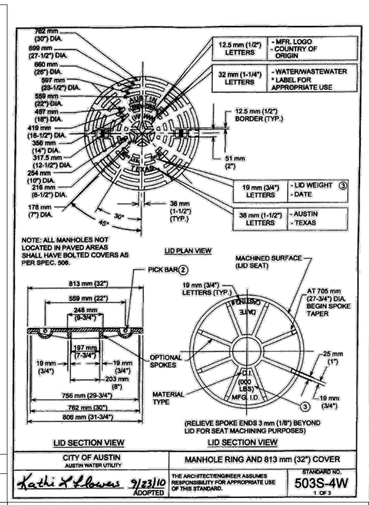
T:\Private\Master\Crescent Belterra\Design\PH 1 SEC 20\B-CRESBELTRA-SEC20-WTD.dwg



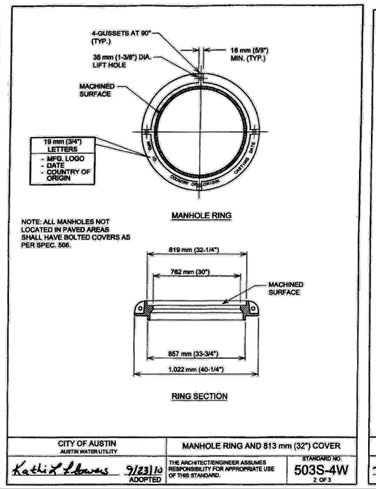
APPLICABLE REFERENCES

STANDARD SPECIFICATION: ITEM 510S.3 (19) W/WW STANDARD PRODUCTS LIST: SPLWW–575 FOR CASING SPACER AND SPLWW–575A FOR END SEAL.

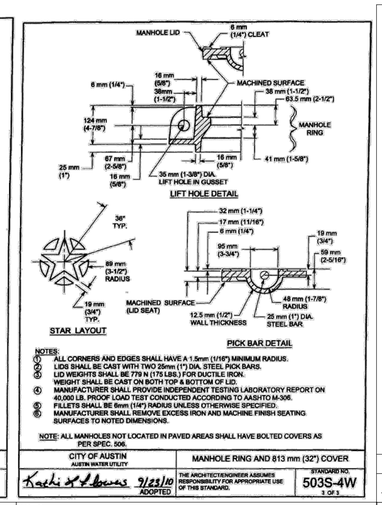
AUSTIN WATER UTILITY		ENCASEMENT DETAIL W/ CASING SPACERS	
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 501S–1



CITY OF AUSTIN AUSTIN WATER UTILITY		MANHOLE RING AND 813 mm (32") COVER	
Kathi L Flowers	9/23/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 1 OF 3



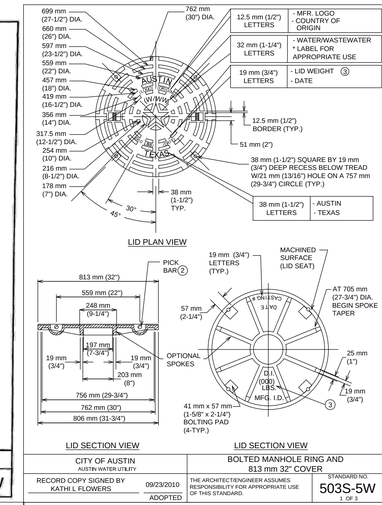
CITY OF AUSTIN AUSTIN WATER UTILITY		MANHOLE RING AND 813 mm (32") COVER	
Kathi L Flowers	9/23/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 2 OF 3



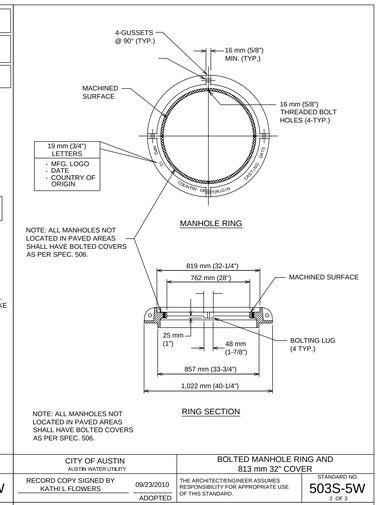
NOTES:
1. ALL CORNERS AND EDGES SHALL HAVE A 1.5 mm (1/16") MINIMUM RADIUS.
2. LIDS SHALL BE CAST WITH TWO 25 mm (1") DIA. STEEL PICK BARS.
3. LID WEIGHTS SHALL BE 779 N (175 LBS.) FOR DUCTILE IRON WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF LID.
4. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 40,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
5. FILLETS SHALL BE 6 mm (1/4") RADIUS UNLESS OTHERWISE SPECIFIED.
6. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

NOTE: ALL MANHOLES NOT LOCATED IN PAVED AREAS SHALL HAVE BOLTED COVERS AS PER SPEC. 506.

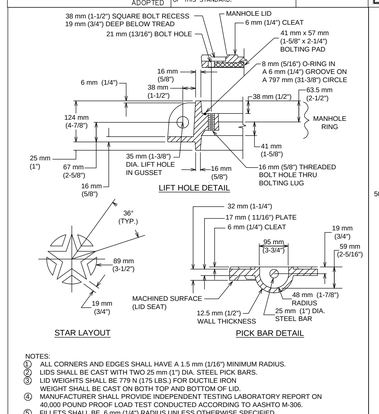
CITY OF AUSTIN AUSTIN WATER UTILITY		MANHOLE RING AND 813 mm (32") COVER	
Kathi L Flowers	9/23/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 3 OF 3



CITY OF AUSTIN AUSTIN WATER UTILITY		BOLTED MANHOLE RING AND 813 mm 32" COVER	
RECORD COPY SIGNED BY KATHI L FLOWERS	09/23/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-5W 1 OF 3

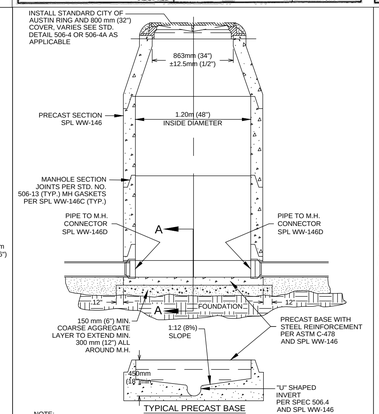


CITY OF AUSTIN AUSTIN WATER UTILITY		BOLTED MANHOLE RING AND 813 mm 32" COVER	
RECORD COPY SIGNED BY KATHI L FLOWERS	09/23/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-5W 2 OF 3



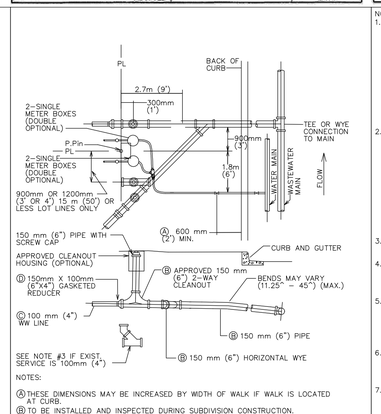
NOTES:
1. ALL CORNERS AND EDGES SHALL HAVE A 1.5 mm (1/16") MINIMUM RADIUS.
2. LIDS SHALL BE CAST WITH TWO 25 mm (1") DIA. STEEL PICK BARS.
3. LID WEIGHTS SHALL BE 779 N (175 LBS.) FOR DUCTILE IRON WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF LID.
4. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 40,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306.
5. FILLETS SHALL BE 6 mm (1/4") RADIUS UNLESS OTHERWISE SPECIFIED.
6. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
7. BOLTS SHALL BE 16 mm x 44 mm (5/8" x 1-3/4" x 11 N.C.) STAINLESS STEEL HEX HEAD (TYPE 316).

CITY OF AUSTIN AUSTIN WATER UTILITY		BOLTED MANHOLE RING AND 813 mm 32" COVER	
RECORD COPY SIGNED BY KATHI L FLOWERS	09/23/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-5W 3 OF 3



NOTE:
1. THE MANHOLE BASE SHALL BE BEDDED ON 150 mm (6") COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MH FOUNDATION SHALL MEET OR EXCEED STD. SPEC. 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY		WASTEWATER MANHOLE ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD NO. 506S-10

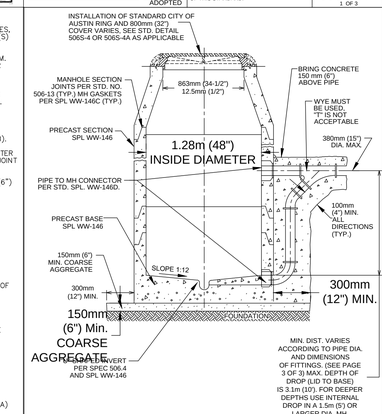


NOTES:
Ⓐ THESE DIMENSIONS MAY BE INCREASED BY WIDTH OF WALK IF WALK IS LOCATED AT CURB.
Ⓑ TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION.
Ⓒ BUILDING INSPECTION DEPARTMENT SHALL INSPECT CUSTOMER'S WASTEWATER LINE, EXCEPT CONNECTION AT WYE, AND WATER LINE TO CUSTOMER'S SHUT–OFF–VALVE.
Ⓓ TAPS INSPECTION OFFICE INSPECTS CONNECTIONS OF CUSTOMER'S WATER AND WASTEWATER LINES TO CITY SYSTEMS.

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520S–3 1 OF 2

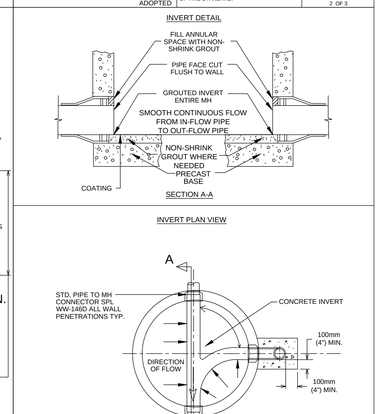
NOTES:
1. DURING SUBDIVISION CONSTRUCTION UTILITY CONTRACTOR INSTALLS WASTEWATER CONNECTION TO MAIN, 150mm (6") STUB WITH HORIZONTAL WYE FOR DOUBLE SERVICES, 150mm (6") SERVICE BRANCH WITH 2–WAY–CLEANOUT(S) AND RISER FOR CLEANOUT(S) (CAPPED), AND PLUG(S) FOR 2–WAY–CLEANOUT(S) AT PROPERTY LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 1% (.264mm (1/8") PER FOOT) MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 1.22m (4'), OTHERWISE THE INSTALLED DEPTH WILL TYPICALLY BE 1.22m (4') TO 1.8m (6'). IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL 520–6. UTILITY CONTRACTOR ALSO INSTALLS WATER CONNECTION TO MAIN WATER PIPE, FITTINGS AND VALVES INCLUDING STOP VALVE–REFER TO DETAIL 520S–7 AND 9 FOR LOCATION OF STOP VALVES. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY CITY OF AUSTIN CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER REMOVES PLUG FROM 2–WAY–CLEANOUT AT PROPERTY LINE, INSTALLS 150mm X 100mm (6" X 4") ELASTOMERIC GASKETED BELL REDUCER (SPL WW–227–B). A BUSHING WILL NOT BE ALLOWED. AS AN ALTERNATE, CUSTOMER MAY INSTALL MINIMUM 450MM (18") LENGTH OF 150mm (6") PIPE, INSTALL 100 mm (4") WASTEWATER LINES, EXTEND 100mm (4") PIPE 150mm (6") MINIMUM INTO 150mm (6") PIPE AND JOINT WITH FLEXIBLE ADAPTER (SPL WW–354) AND CAST IN IN PLACE CONCRETE SUPPORT BLOCK UNDER THE FLEXIBLE ADAPTER. BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM. CUSTOMER ALSO INSTALLS WATER LINES INCLUDING FITTINGS AND VALVES ON BOTH SIDES OF METER, INSTALL METER BOXES AND COVERS. ALL IN ACCORDANCE WITH INFORMATION ON APPLICABLE STANDARD DRAWING. A VENTED SPACER MAY BE USED TO ASSURE PROPER SPACING AND ALIGNMENT OF METER FITTINGS.
3. IF EXISTING WASTEWATER SERVICE IS 100mm (4"), CUSTOMER SHALL INSTALL A 100mm (4") ELASTOMERIC GASKETED WYE AND VERTICAL 45 DEGREE BEND IN PLACE OF THE 2–WAY CLEANOUT.
4. IF EXISTING SERVICE IS NOT PVC, THE CUSTOMER SHALL INSTALL A FLEXIBLE ADAPTER (SPL WW–354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE ADAPTER TO TRANSITION TO PVC. THE SUPPORT BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER.
5. CUSTOMER IS RESPONSIBLE FOR METER BOX AND PIPING SYSTEM UNTIL METER IS INSTALLED AND WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO CITY SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL VALVES AND STOPS, METER BOX AND 2–WAY–CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
6. CITY OF AUSTIN ACTIVITY IS LIMITED TO INSTALLATION OF THE WATER METER AND INSPECTION OF CONNECTIONS TO THE CITY'S WATER AND WASTEWATER SYSTEMS. FOR MAINTENANCE PURPOSES, THE CITY'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WATER CUT–OFF VALVE AND AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2–WAY–CLEANOUT.
7. PIPING AND TUBING IN STREET RIGHT–OF–WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION SECTION 510.3 (14). MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B); BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESES AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 1.07m (42"). ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.
8. NO METER BOX OR CLEAN OUT SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM AUSTIN WATER UTILITY.

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520S–3 2 OF 2

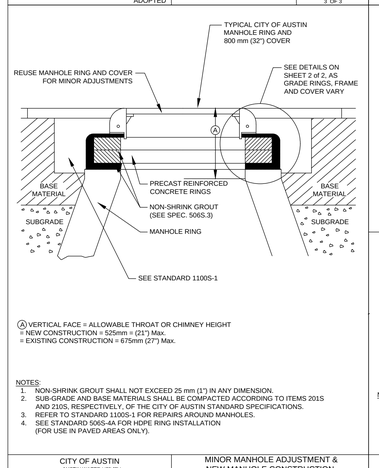


NOTES:
1. THE MANHOLE BASE SHALL BE BEDDED ON 150mm (6") COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MANHOLE FOUNDATION SHALL MEET OR EXCEED SPEC. 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY		PRECAST MANHOLE WITH DROP INLET ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-8 1 OF 3



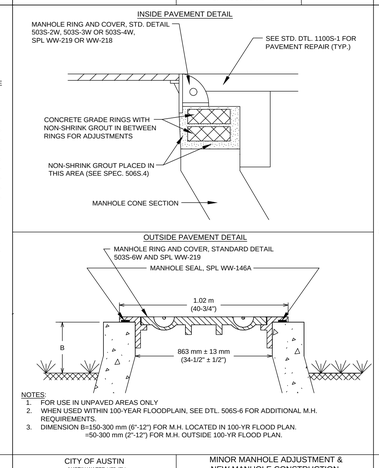
CITY OF AUSTIN AUSTIN WATER UTILITY		PRECAST MANHOLE WITH DROP INLET ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-8 2 OF 3



Ⓐ VERTICAL FACE = ALLOWABLE THROAT OR CHIMNEY HEIGHT
= NEW CONSTRUCTION = 525mm = (21") Max.
= EXISTING CONSTRUCTION = 675mm (27") Max.

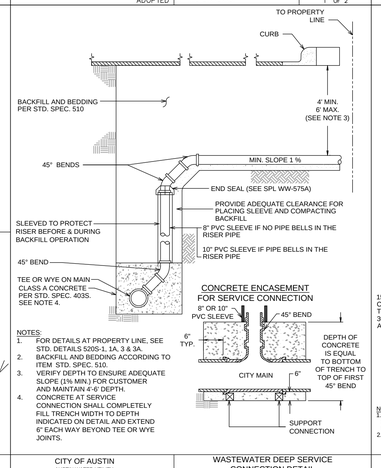
NOTES:
1. NON-SHRINK GROUT SHALL NOT EXCEED 25 mm (1") IN ANY DIMENSION.
2. SUB-GRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO ITEMS 201S AND 210S, RESPECTIVELY, OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
3. REFER TO STANDARD 1100S-1 FOR REPAIRS AROUND MANHOLES.
4. SEE STANDARD 506S–4A FOR HDPE RING INSTALLATION (FOR USE IN PAVED AREAS ONLY).

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 1 OF 2



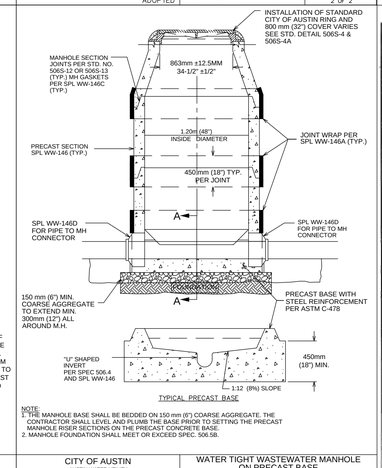
NOTES:
1. FOR USE IN UNPAVED AREAS ONLY
2. WHEN USED WITHIN 100-YEAR FLOODPLAIN, SEE DTL. 506S-6 FOR ADDITIONAL M.H. REQUIREMENTS.
3. DIMENSION B=150-300 mm (6"-12") FOR M.H. LOCATED IN 100-YR FLOOD PLAN. =50-300 mm (2"-12") FOR M.H. OUTSIDE 100-YR FLOOD PLAN.

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 2 OF 2



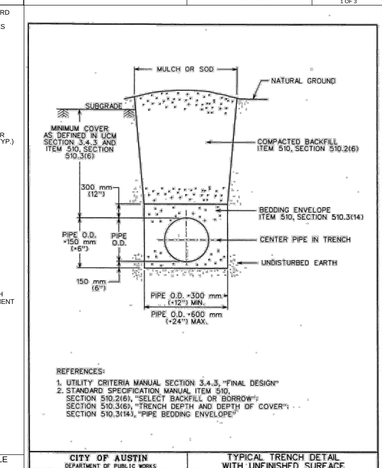
NOTES:
1. FOR DETAILS AT PROPERTY LINE, SEE STD. DETAILS 520S-1, 1A, 3 & 3A.
2. BACKFILL AND BEDDING ACCORDING TO ITEM STD. SPEC. 510.
3. VERIFY DEPTH TO ENSURE ADEQUATE SLOPE (1% MIN.) FOR CUSTOMER AND MAINTAIN 4'-6' DEPTH.
4. CONCRETE AT SERVICE CONNECTION SHALL COMPLETELY FILL TRENCH WIDTH TO DEPTH INDICATED ON DETAIL AND EXTEND 6" EACH WAY BEYOND TEE OR WYE JOINTS.

CITY OF AUSTIN AUSTIN WATER UTILITY		WASTEWATER DEEP SERVICE CONNECTION DETAIL	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520-6



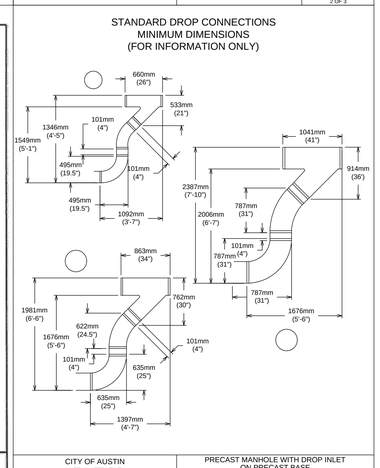
NOTE:
1. THE MANHOLE BASE SHALL BE BEDDED ON 150 mm (6") COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MANHOLE FOUNDATION SHALL MEET OR EXCEED SPEC. 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY		WATER TIGHT WASTEWATER MANHOLE ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-6



REFERENCES:
1. UTILITY CRITERIA MANUAL SECTION 3.4.3, "FINAL DESIGN"
2. STANDARD SPECIFICATION MANUAL ITEM 510, SECTION 510.2(6), "SELECT BACKFILL OR BORROW"; SECTION 510.3(6), "TRENCH DEPTH AND DEPTH OF COVER"; SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL TRENCH DETAIL WITH UNFINISHED SURFACE	
Joe Rodriguez	3/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 510S–5



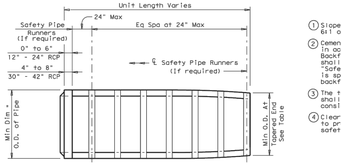
CITY OF AUSTIN AUSTIN WATER UTILITY		PRECAST MANHOLE WITH DROP INLET ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-8 3 OF 3

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

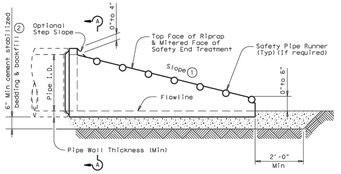
Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

**PRO



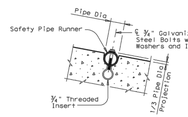
PLAN VIEW - 12" THRU 24"



LONGITUDINAL ELEVATION - 12" THRU 24"

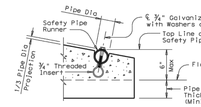
1. Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
2. Cement stabilized bedding and backfill shall be in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill shall be considered subsidiary to the Item "Safety End Treatment". Riprap shall be specified in the Safety End Treatment backfill shall be as directed by Engineer.
3. The top 4" of void between Precast End Treatments shall be filled with concrete Riprap and shall be considered subsidiary to Safety End Treatment.
4. Clear distance between pipes shall be adjusted to provide for the minimum distance between safety end treatments.

PIPE I.D.	MINIMUM WALL THICKNESS	MINIMUM O.D.	MIN O.D. AT TAPERED END	MIN REINF REQUIREMENTS (Sq in/ft of pipe)	MAXIMUM SLOPE	MINIMUM LENGTH OF UNIT	PIPE RUNNERS REQUIRED		REQUIRED PIPE RUNNER SIZES		
							SINGLE PIPE	MULTIPLE PIPE	NOMINAL DIA.	O.D.	I.D.
12"	2"	16"	16"	0.07 CIRC.	6:1	4'-0"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
15"	2 1/4"	19 1/2"	19"	0.07 CIRC.	6:1	5'-8"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
18"	2 1/2"	23"	21 1/2"	0.07 CIRC.	6:1	7'-3"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 CIRC.	6:1	10'-6"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
30"	3 1/2"	37"	31"	0.18 CIRC.	6:1	12'-1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 ELIP.	6:1	15'-4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	51"	41 1/2"	0.23 ELIP.	6:1	18'-7"	Yes	Yes	4" STD	4.500"	4.026"

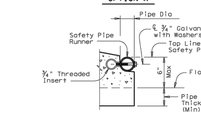


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



OPTION A



OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When Precast Safety End Treatment is used as a Contractor's alternate to mitered RCP, Riprap will not be required unless noted otherwise on the plans.

All Precast concrete end sections shall be manufactured in accordance with Item "Reinforced Concrete Pipe Culverts" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Precast concrete end sections shall be provided with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe Runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Pipe Runners shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

All steel components except reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

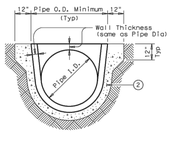
Texas Department of Transportation — Bridge Division

PRECAST SAFETY END TREATMENT

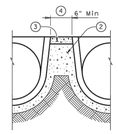
TYPE II ~ PARALLEL DRAINAGE

PSET-RP

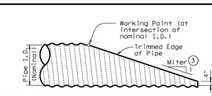
FILE: psetrpae.dgn	DN: RLR	CK: ELR	DW: JTR	CK: GAF
©TxDOT May 2005 REVISIONS	DISTRICT	FEDERAL AID PROJECT		SHEET
	COUNTY	CONTROL	SECT	JOB	HIGHWAY



SECTION A-A



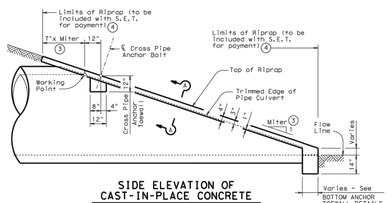
MULTIPLE PIPE INSTALLATION



NOTE: All Pipe Runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

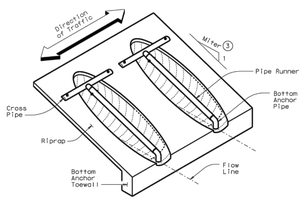
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert. Details of Concrete Pipe Culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing Concrete Pipe Culvert. Details of Corrugated Metal Pipe Culvert are similar. Pipe Runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing Installation with no skew.)

CROSS PIPE LENGTHS & PIPE RUNNER LENGTHS 1 2

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length																	
			3:1 Side Slope					4:1 Side Slope					6:1 Side Slope							
			0° Skew	15° Skew	30° Skew	45° Skew		0° Skew	15° Skew	30° Skew	45° Skew		0° Skew	15° Skew	30° Skew	45° Skew				
24"	1'- 7"	3'- 5"	N/A	N/A	N/A	N/A		5'-10"	N/A	N/A	N/A		8'- 1"	N/A	N/A	N/A				
27"	1'- 8"	3'- 8"	N/A	N/A	N/A	N/A		5'- 5"	6'-11"	N/A	N/A		7'- 7"	9'- 7"	N/A	N/A				
30"	1'-10"	3'-11"	N/A	N/A	N/A	N/A		6'- 4"	8'- 0"	N/A	N/A		8'- 9"	11'- 0"	N/A	N/A				
33"	1'-11"	4'- 2"	6'- 2"	6'- 5"	7'- 3"	9'- 1"		8'- 6"	8'-10"	10'- 0"	12'- 5"		13'- 3"	13'- 9"	15'- 5"	19'- 2"				
36"	2'- 1"	4'- 5"	6'-11"	7'- 3"	8'- 2"	10'- 2"		9'- 6"	9'-11"	11'- 2"	13'-10"		14'- 9"	15'- 3"	17'- 2"	21'- 3"				
42"	2'- 4"	4'-11"	8'- 6"	8'-10"	9'-11"	12'- 4"		11'- 7"	12'- 0"	13'- 6"	16'- 8"		17'- 9"	18'- 5"	20'- 8"	25'- 7"				
48"	2'- 7"	5'- 5"	10'- 1"	10'- 5"	11'- 9"	N/A		13'- 7"	14'- 2"	15'-10"	N/A		20'- 9"	21'- 6"	24'- 2"	N/A				
54"	3'- 0"	5'-11"	11'- 8"	12'- 1"	N/A	N/A		15'- 8"	16'- 3"	N/A	N/A		23'-10"	24'- 8"	N/A	N/A				
60"	3'- 3"	6'- 5"	13'- 3"	N/A	N/A	N/A		17'- 9"	N/A	N/A	N/A		26'-10"	N/A	N/A	N/A				

TYPICAL PIPE CULVERT MITERS 3

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED 2

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (No Skew)	Always required
42" to 60"	Always required	Always required

STANDARD PIPE SIZES & MAX PIPE RUNNER LENGTHS 1

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10'- 0"
4" STD	4.500"	4.026"	19'- 8"
5" STD	5.563"	5.047"	34'- 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) 5

Nominal Culvert I.D.	3:1 Side Slope					4:1 Side Slope					6:1 Side Slope				
	0° Skew	15° Skew	30° Skew	45° Skew		0° Skew	15° Skew	30° Skew	45° Skew		0° Skew	15° Skew	30° Skew	45° Skew	
12"	0.4	0.4	0.5	0.5		0.5	0.5	0.5	0.6		0.7	0.7	0.7	0.8	
15"	0.5	0.5	0.5	0.6		0.6	0.6	0.6	0.7		0.7	0.7	0.8	0.9	
18"	0.5	0.5	0.6	0.6		0.6	0.7	0.7	0.8		0.8	0.8	0.9	1.0	
21"	0.6	0.6	0.6	0.7		0.7	0.7	0.8	0.9		0.9	0.9	1.0	1.2	
24"	0.6	0.7	0.7	0.8		0.8	0.8	0.8	1.0		1.0	1.0	1.1	1.3	
27"	0.7	0.7	0.8	0.9		0.8	0.9	0.9	1.1		1.1	1.1	1.2	1.4	
30"	0.8	0.8	0.8	0.9		0.9	0.9	1.0	1.2		1.2	1.2	1.3	1.6	
33"	0.8	0.8	0.9	1.0		1.0	1.0	1.1	1.3		1.3	1.4	1.5	1.7	
36"	0.9	0.9	0.9	1.1		1.1	1.1	1.2	1.4		1.4	1.5	1.6	1.8	
42"	1.0	1.0	1.1	1.3		1.2	1.3	1.3	1.6		1.6	1.7	1.8	2.1	
48"	1.1	1.1	1.2	N/A		1.4	1.4	1.5	N/A		1.9	1.9	2.1	N/A	
54"	1.3	1.3	N/A	N/A		1.6	1.6	N/A	N/A		2.1	2.1	N/A	N/A	
60"	1.4	N/A	N/A	N/A		1.7	N/A	N/A	N/A		2.3	N/A	N/A	N/A	

1. Size of Pipe Runner shall be as shown in the tables. Cross Pipe shall be the same size as the Pipe Runner. Cross Pipe Stub Out and Bottom Anchor Pipe shall be the next smaller size pipe as shown in the STANDARD PIPE SIZES table.
2. This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

   For 60" culvert pipes, the skew must not exceed 0°.
   For 54" culvert pipes, the skew must not exceed 15°.
   For 48" culvert pipes, the skew must not exceed 30°.
   For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

   If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT "Roadway Design Manual".
3. Miter = Slope of Mitered Pipe Culvert End
4. Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".
5. Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple Pipe Culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

SHEET 1 OF 2

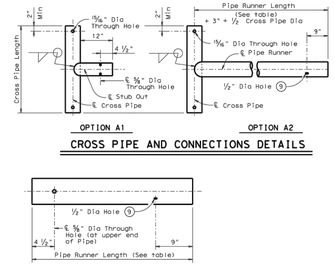
Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdae.dgn	DN: GAF	CK: CAF	DW: JBP	CK: GAF
©TxDOT February 2010 REVISIONS	CONT	SECT	JOB	HIGHWAY
EX-DB: Add note for synthetic fibers.	DIST		COUNTY	SHEET NO.

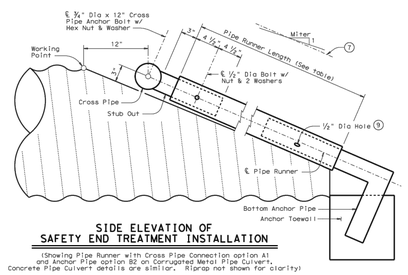


OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS

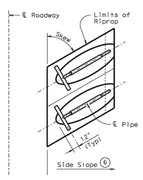
NOTE: The separate Pipe Runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

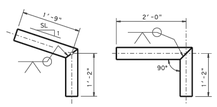


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing Pipe Runner with Cross Pipe Connection option A1 and Anchor Pipe option B2 on Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Riprap not shown for clarity)

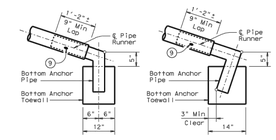


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

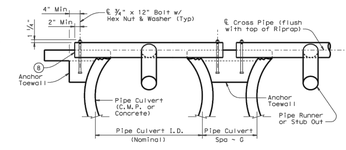
BOTTOM ANCHOR PIPE DETAILS 10



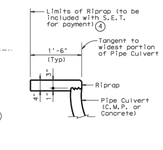
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert & Riprap not shown for clarity)



SHOWING CROSS PIPE & ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT & RIPRAP

SECTION A-A

4. Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".
6. Recommended values of side slope are 3:1, 4:1, & 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.
7. Note that actual slope of Pipe Runner may vary slightly from Side Slope of Riprap and trimmed Culvert Pipe edge.
8. Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.
9. After Installation, the 1/2" hole shall be inspected to ensure that the lap of the Pipe Runner with the Bottom Anchor Pipe is adequate.
10. At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the Runner) may be substituted for the mitered and welded joint in the Bottom Anchor Pipe.

GENERAL NOTES:

Pipe Runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Pipe Runners.

Riprap and all necessary filters shall be Concrete Riprap conforming to Item 432, "Riprap", of the TxDOT Specifications.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Pipe Runners, Cross Pipes, and Anchor Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdae.dgn	DN: GAF	CK: CAF	DW: JBP	CK: GAF
©TxDOT February 2010 REVISIONS	CONT	SECT	JOB	HIGHWAY
EX-DB: Add note for synthetic fibers.	DIST		COUNTY	SHEET NO.

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Texas Department of Transportation for any purpose whatsoever. The use of this standard is entirely at the risk of the user and the Texas Department of Transportation disclaims any liability for the consequences of this standard's misuse or modification.

DATE:
FILE:

STATE OF TEXAS — STEPHEN R. DELGADO — 99342 — LICENSED PROFESSIONAL ENGINEER — 8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F 48209C0128F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL
TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TX 78739
CONTACT: PAUL C. SAUVE, RPLS
PHONE: (512) 573-6730

REVISIONS

NO	DATE - DESCRIPTION

EDITED: June 7, 2017
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15-PC Carlos A. Martinez

BELTERRA
SECTION 20-1 & 20-2

TxDOT DETAILS

CONSTRUCTION PLANS FOR
BELTERRA
SECTION 21, PHASE 2
STREET, DRAINAGE, AND UTILITY IMPROVEMENTS

UTILITIES

WATER & WASTEWATER
HAYS COUNTY W.C.I.D. No. 2
SEVERN TRENT OFFICES
14050 SUMMIT DRIVE, SUITE 113A
AUSTIN, TEXAS 78728
CONTACT: KRISTI HESTER
PHONE: 512.246.0498

GAS
PROPANE BELTERRA, LTD.
1406 CAMPCRAFT ROAD, SUITE 222
AUSTIN, TX 78746
512.272.5503

ELECTRIC
PEDERNALES ELECTRIC COOP
661 HIGHWAY 290 WEST
DRIPPING SPRINGS, TX 78620
512.858.5611

ONE-CALL
UTILITY LOCATING SERVICE
CONTRACTOR TO CALL BEFORE DIGGING!!
PHONE: 1.800.245.4545

CONSULTANTS/CONTRACTORS

CIVIL ENGINEER
TEXAS ENGINEERING SOLUTIONS
3815 S. CAPITAL OF TEXAS HWY, SUITE 300
AUSTIN, TX 78704
CONTACT: STEPHEN R. DELGADO, P.E
PHONE: 512.904.0505

SURVEYOR
AUSTIN SPATIAL TECHNOLOGIES
P.O. BOX 1528
AUSTIN, TEXAS 78767
CONTACT: PAUL SAUVE JR., R.P.L.S.
PHONE: 512.573.6730

OWNER

LH BELTERRA, LLC
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD.,
SUITE 1075
IRVING, TX 75039

DEVELOPER

LH BELTERRA, LLC
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD.,
SUITE 1075
IRVING, TX 75039

FLOODPLAIN INFORMATION

I, STEPHEN R. DELGADO, THE UNDERSIGNED, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THIS CONSTRUCTION PLAN TO BE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. THE 100-YEAR FLOOD PLAIN IS CONTAINED WITHIN THE DRAINAGE EASEMENT OR DRAINAGE LOT AS SHOWN HEREON. NO PORTION OF THIS TRACT IS WITHIN THE DESIGNATED FLOOD HAZARD AREA AS SHOWN ON THE FEDERAL FLOOD INSURANCE ADMINISTRATION FIRM 48209C0140F, HAYS COUNTY, TEXAS, DATED SEPTEMBER 2, 2005.

LEGAL DESCRIPTION

KNOW ALL MEN BY THESE PRESENTS: THAT LH BELTERRA TX, L.P., OWNER OF 109.76 ACRES OF LAND IN THE JAMES FLOYD SURVEY No. 175, IN HAYS COUNTY, TEXAS, BEING A PORTION OF A CALLED 381.20 ACRE TRACT KNOWN AS TRACT 1 AS CONVEYED TO IT BY VIRTUE OF SPECIAL WARRANTY DEED RECORDED IN VOLUME 4762 PAGE 747 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS, DO HEREBY SUBDIVIDE SAID 109.76 ACRE PORTION OF SAID 381.20 ACRE TRACT OF LAND IN ACCORDANCE WITH THE ATTACHED MAP OR PLAT TO BE KNOWN AS "BELTERRA SECTION 21-2" SUBJECT TO ANY EASEMENTS AND/OR RESTRICTIONS HERETOFORE GRANTED, AND DO HEREBY DEDICATE TO THE PUBLIC USE OF THE STREETS AND EASEMENTS SHOWN HEREON. IN ADDITION, LOT 37, BLOCK A, AND LOT 31 BLOCK B ARE HEREBY DEDICATED TO AND MAINTAINED BY HAYS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 2.

NOTES

1. THIS SITE IS LOCATED IN HAYS COUNTY.
2. THIS SITE IS NOT LOCATED WITHIN THE EDWARDS AQUIFER RECHARGE ZONE, BUT IS LOCATED IN THE EDWARDS AQUIFER CONTRIBUTING ZONE.
3. THIS SITE IS LOCATED ENTIRELY WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS.
4. THIS SITE IS LOCATED WITHIN THE FLOOD INSURANCE RATE MAP NO. 48209C0140F, EFFECTIVE DATE OF SEPTEMBER 02, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. NO PORTION OF ANY RESIDENTIAL LOT WILL BE LOCATED WITHIN A DEFINED 100-YEAR FLOODPLAIN.
5. WATER SERVICE WILL BE PROVIDED TO EACH LOT BY HAYS COUNTY WCID No. 2.
6. ORGANIZED WASTEWATER SERVICE WILL BE PROVIDED TO EACH LOT BY HAYS COUNTY WCID NO. 2.
7. RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT, THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY THE CITY ENGINEER.

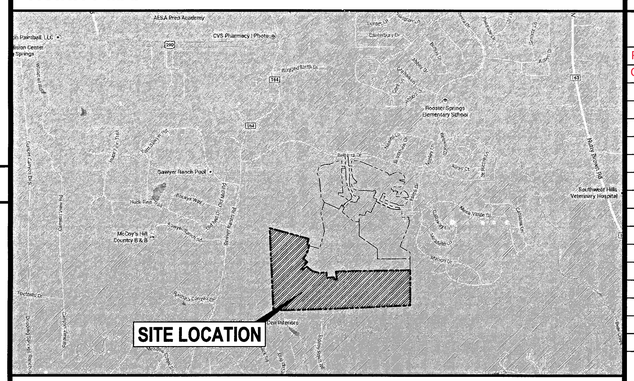
NOTE TO CONTRACTOR

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE, HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM 1-800-245-4545, OR THE OWNER OF EACH INDIVIDUAL UTILITY, FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION.

ENVIRONMENTAL INSPECTION HAS THE AUTHORITY TO MODIFY/CHANGE EROSION AND SEDIMENTATION CONTROLS TO KEEP THE PROJECT IN COMPLIANCE, AS PER TCEQ & HAYS COUNTY REGULATIONS.

VICINITY MAP



REVISION BLOCK

NO.	REVISION DESCRIPTION	REVISE (R), ADD (A), VOID (V), SHEET #	TOTAL # SHEETS	NET CHANGE IMP. COVER SQ. FT.	TOTAL SITE IMP. COVER SQ. FT./ %	APPROVED/ DATE
R1	UPDATE WET WELL FLOW LINES	39, 46, 48, 49 (R)	4	N/A	N/A	12/21/18
C1	UPDATE STORM LAT C2 AND MAIN D, & UPDATE TRENCH DRAIN ALIGNMENT	29, 30, 31, 38, 39 (R)	5	N/A	N/A	02/15/18

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12 PLAN & PROFILE: MESA VERDE DRIVE STA. 45+50-55+25
13 PLAN & PROFILE: MESA VERDE DRIVE STA. 55+25-62+04
14 PLAN & PROFILE: ANGELINA VALLEY DRIVE STA. 1+51-11+00
15 PLAN & PROFILE: ANGELINA VALLEY DRIVE STA. 11+00-13+32
16 PLAN & PROFILE: ACCESS ROAD STA. 21+00-32+60
17 PLAN & PROFILE: ACCESS ROAD STA. 8+50-21+00
18 PLAN & PROFILE: ACCESS ROAD STA. 5+01-8+50
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S-1 STRUCTURAL GENERAL NOTES (BY OTHERS)
S-2 ELEVATION SECTION AND SCHEDULES (BY OTHERS)
S-3 DETAIL SHEET (BY OTHERS)

REVIEWED BY:

ESD #6 — DATE 9/1/17

HAYS COUNTY — DATE 8/29/17

HAYS COUNTY W.C.I.D. #2 — DATE 9/1/17

CITY OF DRIPPING SPRINGS: CITY ADMINISTRATOR — DATE 8/31/17

CITY OF DRIPPING SPRINGS: CITY ENGINEER — DATE

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD.,
SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:
AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

COVER SHEET

T:\Private Market\Crescent Belterra\Design\PH 2 SEC 21\Sht Construction\3-CRESBELTRA_PH2_SEC21-COV.dwg

STATE OF TEXAS §
COUNTY OF HAYS §

KNOW ALL MEN BY THESE PRESENTS: THAT LH BELTERRA LLC, A DELAWARE LIMITED LIABLITY COMPANY, OWNER OF 109.76 ACRES OF LAND IN THE JAMES FLOYD SURVEY No. 175, IN HAYS COUNTY, TEXAS, BEING A PORTION OF A CALLED 256.854 ACRE TRACT AS CONVEYED TO IT BY VIRTUE OF SPECIAL WARRANTY DEED RECORDED IN INSTRUMENT NO. 17005989 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS, DO HEREBY SUBDIVIDE SAID 109.76 ACRE PORTION OF SAID 256.854 ACRE TRACT OF LAND IN ACCORDANCE WITH THE ATTACHED MAP OR PLAT TO BE KNOWN AS

"BELTERRA SECTION 21-2"

SUBJECT TO ANY EASEMENTS AND/OR RESTRICTIONS HERETOFORE GRANTED, AND DO HEREBY DEDICATE TO THE PUBLIC USE OF THE STREETS AND EASEMENTS SHOWN HEREON. IN ADDITION, LOT 37, BLOCK A, AND LOT 31 BLOCK B ARE HEREBY DEDICATED TO AND MAINTAINED BY HAYS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 2.

WITNESS MY HAND THIS THE _____ DAY OF _____, 20____.

LH BELTERRA LLC, A DELEWARE LIMITED LIABILITY COMPANY

BY:
STEPHEN E. YETTS, AUTHORIZED SIGNATORY

STATE OF TEXAS §
COUNTY OF HAYS §

ON _____, BEFORE ME, PERSONALLY APPEARED STEPHEN E. YETTS, AUTHORIZED SIGNATORY, WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME IN HIS AUTHORIZED CAPACITY, AND THAT BY HIS SIGNATURE ON THE INSTRUMENT THE PERSON, OR THE ENTITY UPON BEHALF OF WHICH THE PERSON ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF TEXAS THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND AND SEAL

SIGNATURE:_____

MY COMMISSION EXPIRES:_____

IN ORDER TO PROMOTE SAFE USE OF ROADWAYS AND PRESERVE THE CONDITIONS OF PUBLIC ROADWAYS, NO DRIVEWAY CONSTRUCTED ON ANY LOT WITHIN THIS SUBDIVISION SHALL BE PERMITTED ACCESS ONTO A PUBLICLY DEDICATED ROADWAY UNLESS (A) A DRIVEWAY PERMIT HAS BEEN ISSUED BY THE TRANSPORTATION DEPARTMENT OF HAYS COUNTY AND (B) THE DRIVEWAY SATISFIES THE REQUIREMENT FOR DRIVEWAYS SET FORTH IN CHAPTER 721 OF THE HAYS COUNTY DEVELOPMENT REGULATIONS.

IN APPROVING THIS PLAT BY THE COMMISSIONERS COURT OF HAYS COUNTY, TEXAS, IT IS UNDERSTOOD THAT THE BUILDING OF ALL STREETS, ROADS, AND OTHER PUBLIC THOROUGHFARES DELINEATED AND SHOWN ON THIS PLAT, AND ALL BRIDGES AND CULVERTS NECESSARY TO BE CONSTRUCTED OR PLACED IN SUCH STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES, OR IN CONNECTION THEREWITH SHALL BE THE RESPONSIBILITY OF THE OWNER AND / OR THE DEVELOPER OF THE TRACT OF LAND COVERED BY THIS PLAT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS PRESCRIBED BY THE COMMISSIONERS COURT OF HAYS COUNTY, TEXAS AND THE COMMISSIONERS OF HAYS COUNTY, TEXAS, ASSUMES NO OBLIGATION TO BUILD THE STREETS, ROADS, OR OTHER PUBLIC THOROUGHFARES SHOWN ON THIS PLAT OR OF CONSTRUCTING ANY BRIDGES OR CULVERTS IN CONNECTION THEREWITH.

OWNER / DEVELOPER:
LH BELTERRA LLC
400 E. LAS COLINAS BLVD.
IRVING,TX 75039
469-513-5600

SURVEYOR:
AUSTIN SPATIAL TECHNOLOGIES, LLC
11209 CHERISSE DRIVE
AUSTIN, TEXAS 78739
(512) 573-6730

ENGINEER:
TEXAS ENGINEERING SOLUTIONS
3815 S. CAPITAL OF TEXAS HIGHWAY
SUITE 300
AUSTIN, TEXAS 78704
O: 512-904-0505
F: 512-904-0509
TBPE NO. 11206

FINAL PLAT NOTES:

1. THIS FINAL PLAT IS LOCATED ENTIRELY WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS AND ENTIRELY WITHIN THE BOUNDARY OF THE HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2.
2. NO PORTION OF THIS PLAT LIES WITHIN THE BOUNDARIES OF THE EDWARDS AQUIFER RECHARGE ZONE.
3. THIS PLAT LIES WITHIN THE BOUNDARIES OF THE CONTRIBUTING ZONE OF THE EDWARDS AQUIFER.
4. THIS PLAT IS LOCATED WITHIN THE BOUNDARY OF THE DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT.
5. THIS PLAT IS BASED UPON TOPOGRAPHICAL INFORMATION TAKEN FROM AN AERIAL SURVEY BY PROTERRA AERIAL MAPPING, INC. DATED MAY 13, 2004.
6. A PORTION OF THIS PROPERTY IS LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD PLAIN AS DELINEATED ON THE FLOOD INSURANCE RATE MAP PANEL NO. 48209C0140F EFFECTIVE DATE OF SEPTEMBER 2, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AND IS CONTAINED WITHIN A DRAINAGE EASEMENT.
7. THERE ARE NO AREAS WITHIN THE PROPOSED SUBDIVISION WITH SLOPES GREATER THAN 35%.
8. WATER SERVICE WILL BE PROVIDED TO EACH RESIDENTIAL LOT BY HAYS COUNTY WCID NO. 2. NO INDIVIDUAL WATER WELLS WILL BE ALLOWED.
9. ORGANIZED WASTEWATER SERVICE WILL BE PROVIDED TO EACH RESIDENTIAL LOT BY HAYS COUNTY WCID NO. 2. NO INDIVIDUAL ON-SITE SEWAGE FACILITY WILL BE ALLOWED.
10. ELECTRIC SERVICE WILL BE PROVIDED BY THE PEDERNALES ELECTRIC COOPERATIVE.
11. TELEPHONE SERVICE WILL BE PROVIDED BY AT&T.
12. ORGANIZED GAS SERVICE WILL BE PROVIDED BY TEXAS COMMUNITY PROPANE.
13. MINIMUM FRONT SETBACK SHALL BE 25 FEET, UNLESS NOTED OTHERWISE.
14. MINIMUM REAR YARD SETBACK SHALL BE 10 FEET.
15. MINIMUM SIDE AND INTERIOR YARD SETBACKS SHALL BE 5 FEET, UNLESS OTHERWISE NOTED.
16. UTILITY EASEMENTS OF 10 FEET SHALL BE LOCATED ALONG EACH SIDE OF DEDICATED RIGHT-OF-WAY.
17. ALL STREETS SHALL BE DESIGNED IN ACCORDANCE WITH APPLICABLE CITY OF DRIPPING SPRINGS REQUIREMENTS AND APPROVED BY THE HAYS COUNTY TRANSPORTATION DEPARTMENT AND UPON ACCEPTANCE SHALL BE DEDICATED TO THE COUNTY FOR MAINTENANCE.
18. ALL LOTS WILL ACCESS PUBLIC STREETS VIA CONCRETE DRIVEWAYS. STREETS TO BE ACCESSED WILL BE CONSTRUCTED WITH CURB AND GUTTER; THEREFORE NO DRIVEWAY CULVERTS WILL BE NECESSARY.
19. MESA VERDE DRIVE WILL BE A RESIDENTIAL COLLECTOR WITH A 60-FOOT RIGHT-OF-WAY AND A 40 FOOT WIDE ROADWAY. ANGELINA VALLEY DRIVE WILL BE CONSTRUCTED AS A LOCAL STREET WITH 28-FOOT ROADWAY WIDTH WITHIN 50-FOOT RIGHTS-OF-WAY.
20. LINEAR FOOTAGE OF MESA VERDE DRIVE: 2963 L.F. LINEAR FOOTAGE OF ANGELINA VALLEY DRIVE: 1187 L.F.
21. THIS PLAT HAS BEEN PREPARED IN ACCORDANCE WITH THE CITY OF DRIPPING SPRINGS REQUIREMENTS AS APPLICABLE TO THIS DEVELOPMENT.
22. AREA WITHIN NEW ROAD RIGHT-OF-WAY = 5.41 ACRES.
23. DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HAYS COUNTY REQUIREMENTS OR AS APPROVED BY THE HAYS COUNTY TRANSPORTATION DEPARTMENT.
24. WATER QUALITY BUFFER ZONE (BUFFER AREAS) RESTRICTIONS:
    A. LIMIT DISTURBANCE OF BUFFER AREAS AS MUCH AS PRACTICAL DURING CONSTRUCTION.
    B. CONSTRUCTION ALLOWED IN THE BUFFER AREAS INCLUDES UTILITIES, DRAINAGE FACILITIES, WATER QUALITY FACILITIES, FENCES AND LOW IMPACT PARKS.
    C. UTILITY CONSTRUCTION AREAS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AFTER CONSTRUCTION.
    D. LOW IMPACT PARK DEVELOPMENT WITHIN THE BUFFER AREAS SHOULD BE LIMITED TO TRAILS, PICNIC FACILITIES, AND SIMILAR CONSTRUCTION THAT DOES NOT SIGNIFICANTLY ALTER THE EXISTING VEGETATION.
25. THIS PLAT IS SUBJECT TO THE "FOSTER RANCH DEVELOPMENT AGREEMENT", DATED APRIL 19, 2001 AND IS COMPLIANT WITH SAID DEVELOPMENT AGREEMENT.
26. OPEN SPACE/GREENBELT LOTS ARE NOT INTENDED FOR RESIDENTIAL DEVELOPMENT.

STATE OF TEXAS §
COUNTY OF TRAVIS §

KNOW ALL MEN BY THESE PRESENTS, THAT I, THE UNDERSIGNED, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS PLAT COMPLIES WITH THE SURVEY RELATED REQUIREMENTS OF THE HAYS COUNTY DEVELOPMENT REGULATIONS AND THE CITY OF DRIPPING SPRINGS AND FURTHER CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE AND IS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND AND THAT THE CORNER MONUMENTS WERE PROPERLY PLACED UNDER MY SUPERVISION.

PAUL C. SAUVE, JR.
REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF TEXAS No. 2518

JUNE 19, 2017
DATE

STATE OF TEXAS
PAUL C. SAUVE, JR.
2518
PROFESSIONAL LAND SURVEYOR

STATE OF TEXAS §
COUNTY OF TRAVIS §

I, STEPHEN R. DELGADO, A LICENSED PROFESSIONAL ENGINEER, DO HEREBY CERTIFY THAT NO PORTION OF A RESIDENTIAL LOT IS LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD ZONE AREA, AS DELINEATED ON THE FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL No. 48209C0140F EFFECTIVE DATE OF SEPTEMBER 02, 2005, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. ADDITIONALLY, STORM WATER RUNOFF FROM THE 100-YEAR STORM EVENT SHALL BE CONTAINED WITHIN THE DRAINAGE FACILITIES TO BE LOCATED WITHIN THE RIGHTS-OF-WAY AND/OR DRAINAGE EASEMENTS SHOWN ON THE ATTACHED PLAT.

STEPHEN R. DELGADO, PE
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS No. 99342

DATE

BELTERRA SECTION 21-2 IS LOCATED ENTIRELY WITHIN THE BOUNDARIES AND SERVICE AREA OF HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2. WATER AND WASTEWATER SERVICE, AS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, WILL BE PROVIDED TO ALL LOTS REQUIRING SERVICE THROUGH THE DISTRICT'S PUBLIC WATER AND WASTEWATER SYSTEMS.

THOMAS PATRICK PHILLIPS, PRESIDENT
HAYS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO. 2

DATE

SEWAGE DISPOSAL / INDIVIDUAL WATER SUPPLY CERTIFICATION, TO-WIT:

NO STRUCTURE IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO AN INDIVIDUAL WATER SUPPLY OR A STATE - APPROVED COMMUNITY WATER SYSTEM. DUE TO DECLINING WATER SUPPLIES AND DIMINISHING WATER QUALITY, PROSPECTIVE PROPERTY OWNERS ARE CAUTIONED BY HAYS COUNTY TO QUESTION THE SELLER CONCERNING GROUND WATER AVAILABILITY. RAIN WATER COLLECTION IS ENCOURAGED AND IN SOME AREAS MAY OFFER THE BEST RENEWABLE WATER RESOURCE.

NO STRUCTURE IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO A PUBLIC SEWER SYSTEM.

NO CONSTRUCTION OR OTHER DEVELOPMENT WITHIN THIS SUBDIVISION MAY BEGIN UNTIL ALL HAYS COUNTY DEVELOPMENT PERMIT REQUIREMENTS HAVE BEEN MET.

JAMES C. GARZA, DIRECTOR
HAYS COUNTY DEVELOPMENT & COMMUNITY SERVICES

DATE

TOM POPE, CFM, RS
HAYS COUNTY FLOODPLAIN ADMINISTRATOR

DATE

STATE OF TEXAS :
COUNTY OF HAYS :

I, THE UNDERSIGNED, DIRECTOR OF THE HAYS COUNTY DEVELOPMENT AND COMMUNITY SERVICES DEPARTMENT, HEREBY CERTIFY THAT THIS SUBDIVISION PLAT CONFORMS TO ALL HAYS COUNTY REQUIREMENTS AS STATED IN THE INTERLOCAL COOPERATION AGREEMENT BETWEEN HAYS COUNTY AND THE CITY OF DRIPPING SPRINGS FOR SUBDIVISION REGULATION WITHIN THE EXTRATERRITORIAL JURISDICTION OF THE CITY OF DRIPPING SPRINGS.

JAMES C. GARZA, DIRECTOR
HAYS COUNTY DEVELOPMENT & COMMUNITY SERVICES

BELTERRA SECTION 21-2 HAS BEEN SUBMITTED AND CONSIDERED BY THE CITY OF DRIPPING SPRINGS AS A FINAL PLAT FOR ADMINISTRATIVE APPROVAL PURSUANT TO ORDINANCE 1230.09, AND HAS BEEN FOUND TO COMPLY WITH THE CITY'S CODE OF ORDINANCES, AND IS HEREBY APPROVED ADMINISTRATIVELY.

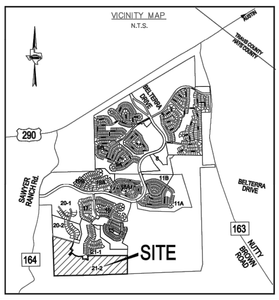
MICHELLE FISCHER, CITY ADMINISTRATOR
CITY OF DRIPPING SPRINGS

DATE

STATE OF TEXAS :
COUNTY OF HAYS :

I, LIZ Q. GONZALEZ, COUNTY CLERK OF HAYS COUNTY, TEXAS DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IN WRITING WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE _____ DAY OF _____, 20___ A.D. AT _____ O'CLOCK ___ M. IN THE PLAT RECORDS OF HAYS COUNTY, TEXAS IN DOCUMENT NO. _____, WITNESS MY HAND AND SEAL OF OFFICE, THIS THE _____ DAY OF _____, 20___ A.D.

LIZ Q. GONZALEZ
COUNTY CLERK
HAYS COUNTY, TEXAS



PROJECT:	BELTERRA SECTION 21-2 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	MAY 2016
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

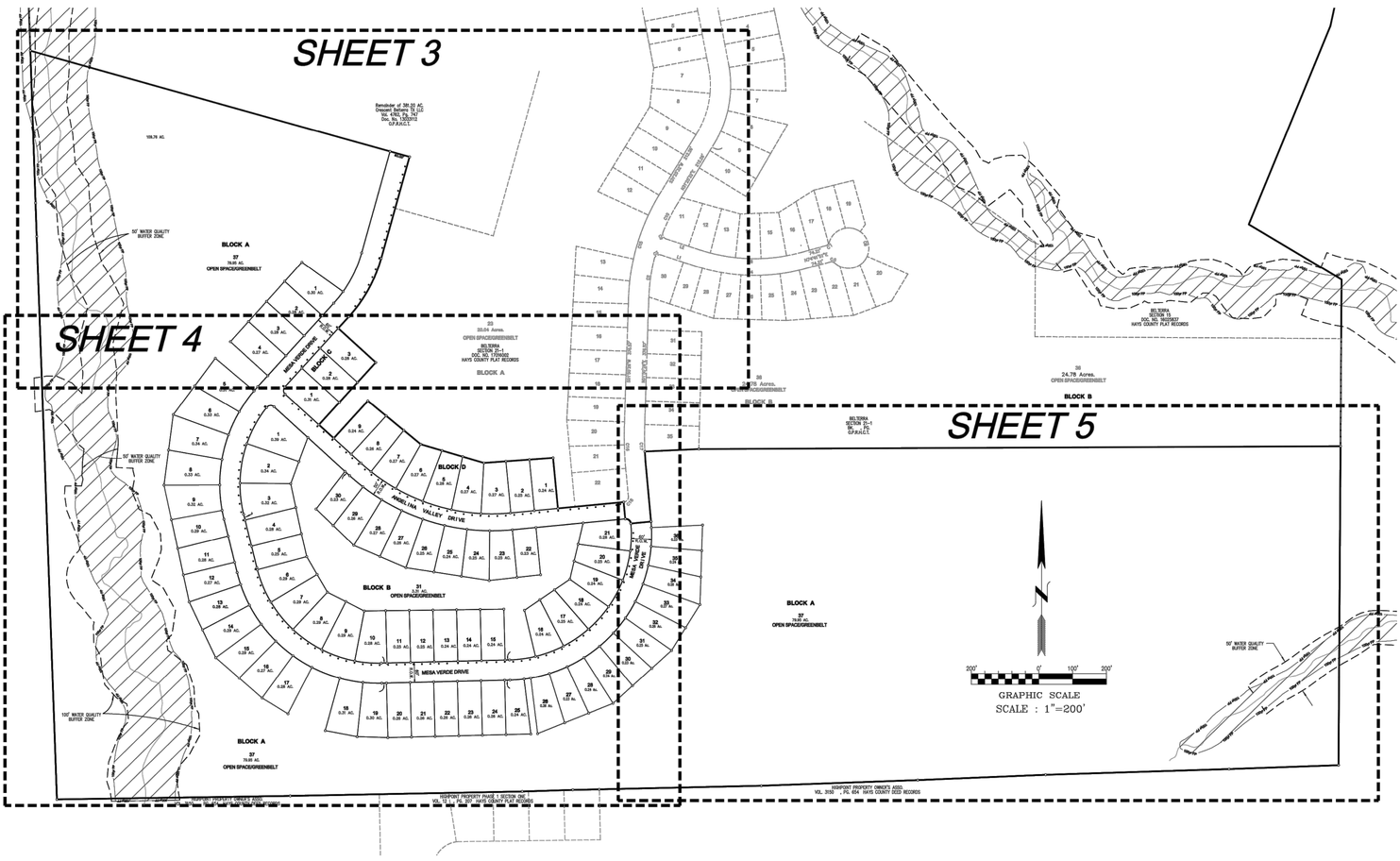
Texas Engineering Solutions
3815 S. CAPITAL OF TEXAS HWY SUITE 300 AUSTIN, TEXAS 78704 O: 512-904-0505 F: 512-904-0509 TBPE NO. 11206

AUSTIN SPATIAL TECHNOLOGIES, LLC
LAND SURVEYORS - GEOMATIC SPECIALISTS
www.austinspatial.com Ph: 512-294-0284

BELTERRA SECTION 21-2

SHEET 1 OF 5

SHEET INDEX



PROJECT:	BELTERRA SECTION 21-2 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	MAY 2016
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

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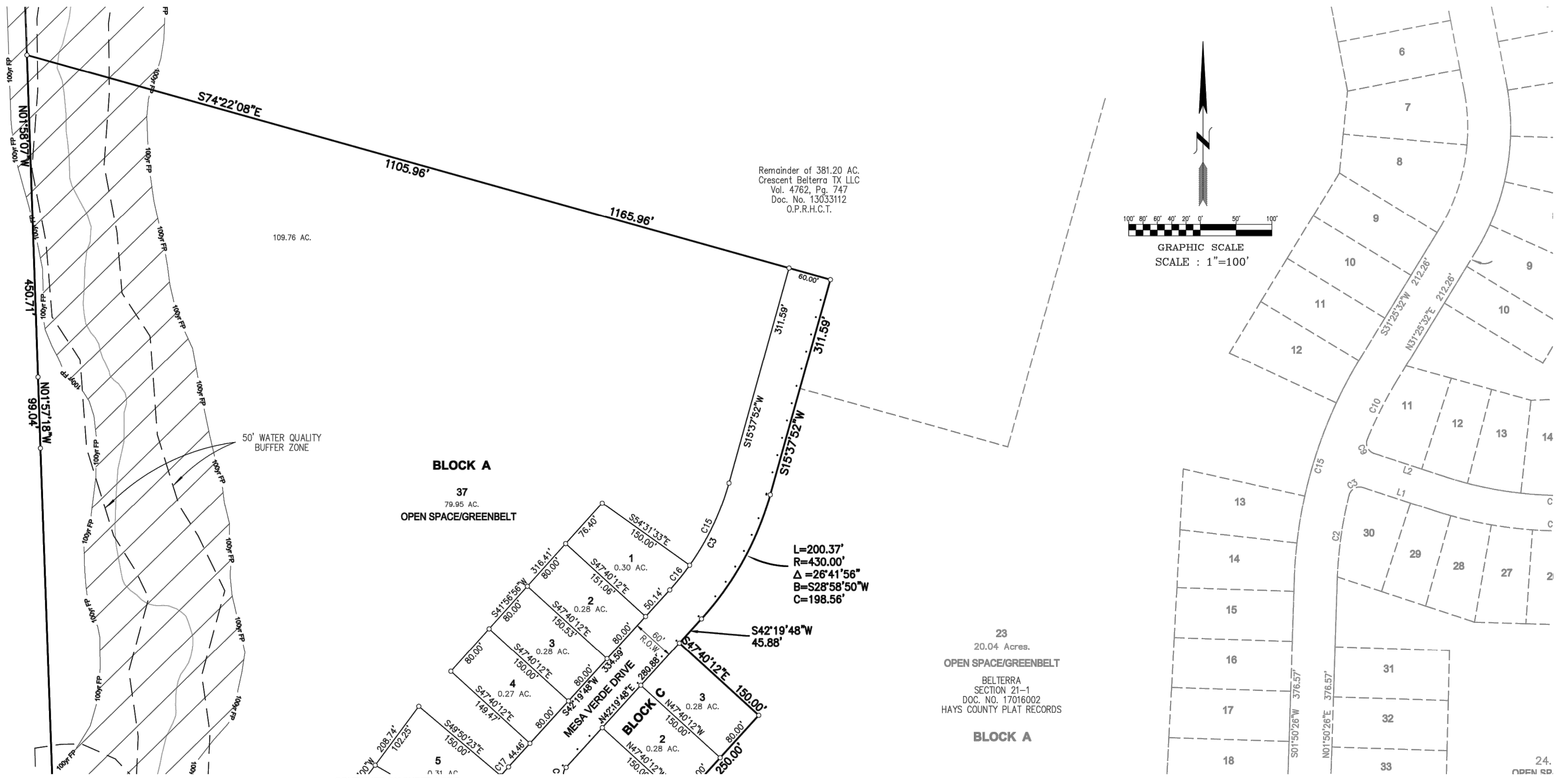
BELTERRA SECTION 21-2

SHEET 2 OF 5



TOTAL NO. SINGLE FAMILY LOTS: 78 (24.40 AC.)
TOTAL NO. GREENBELT, & DRAINAGE EASEMENT LOTS: 2 (79.95 AC.)
TOTAL NO. BLOCKS: 4

LOT AREA	104.35 AC.
STREET ROW AREA	5.41 AC.
TOTAL AREA	109.76 AC.

CENTERLINE STREET LINEAR FOOTAGE			
STREET NAME	ROW WIDTH	LENGTH	TYPE
MESA VERDE DRIVE	60'	2,963'	COLLECTOR
ANGELINA VALLEY DRIVE	50'	1187'	LOCAL
TOTAL LINEAR FEET OF STREET ROW = 4,150			

LOT SIZE	NO.
>10 ACRES	1
5 TO 10 ACRES	0
2 TO 5 ACRES	1
1 TO 2 ACRES	0
< 1 ACRE	78

BM-CM-1
Iron rod found in concrete southeast of the north corner of Lot 41, Block B, Belterra Phase 4, Section 18.
Elevation = 1111.53' (NGVD 29)

TBM-4
"+" cut in concrete of electric transformer pad, north side of Belterra Blvd., 76'+/- SE of southeast corner of Lot 12, Block B Belterra Phase 4, Section 19B
Elevation = 1141.30' (NGVD 29)

LEGEND:

- IRON ROD WITH CAP FOUND
- IRON ROD WITH CAP SET
- COTTON SPINDLE SET
- MAG NAIL SET
- CONCRETE MONUMENT SET
- D.E. DRAINAGE ESMT.
- W.L.E. WATER LINE ESMT.
- W.W.E. WASTEWATER EASEMENT
- SIDEWALK LOCATION
- O.P.R.H.C.T. OFFICIAL PUBLIC RECORDS HAYS COUNTY, TEXAS

PROJECT:	BELTERRA SECTION 21-2 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	MAY 2016
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

Texas Engineering Solutions

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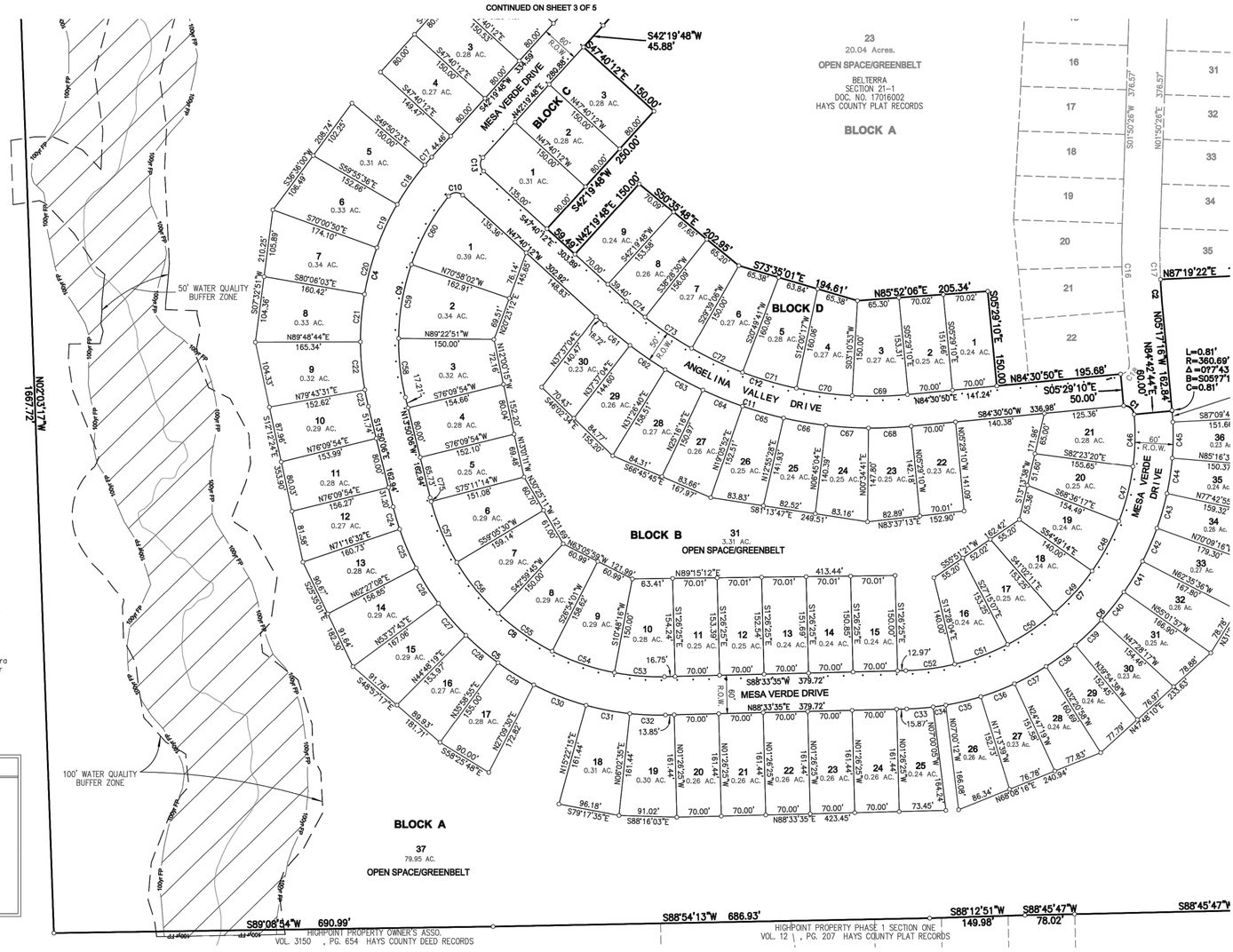
BELTERRA SECTION 21-2

SHEET 3 OF 5

CONTINUED ON SHEET 3 OF 5



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LEGEND:

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PARTYCHIEF:	JC
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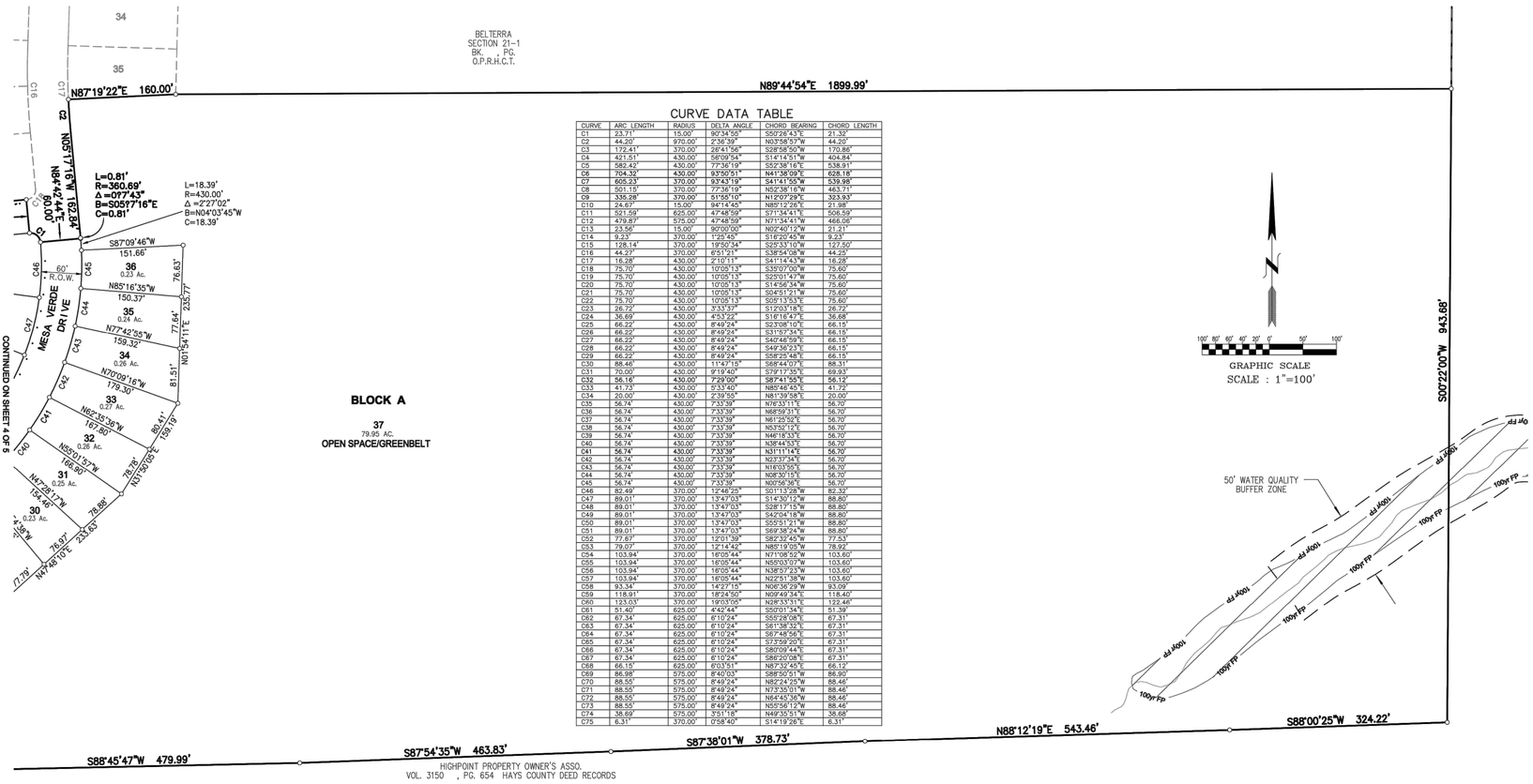
BELTERRA SECTION 21-2

SHEET 4 OF 5



CURVE DATA TABLE

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	23.71'	15.00'	90°34'58"	S50°28'43"E	21.32'
C2	44.20'	970.00'	2°36'39"	N03°58'57"W	44.20'
C3	172.41'	370.00'	26°41'56"	S28°58'50"W	170.86'
C4	421.51'	430.00'	56°09'54"	S14°14'51"W	404.84'
C5	582.42'	430.00'	77°36'19"	S52°38'16"E	538.91'
C6	704.32'	430.00'	93°50'51"	N41°38'09"E	628.18'
C7	605.23'	370.00'	93°43'19"	S41°41'55"W	539.98'
C8	501.15'	370.00'	77°36'19"	N52°38'16"W	463.71'
C9	335.28'	370.00'	51°55'19"	N12°07'29"E	323.93'
C10	24.67'	15.00'	94°14'45"	N85°17'28"E	21.98'
C11	521.59'	625.00'	47°48'59"	S71°34'41"E	506.59'
C12	479.87'	575.00'	47°48'59"	N71°34'41"W	466.08'
C13	23.56'	15.00'	90°00'00"	N02°40'12"W	21.21'
C14	9.23'	370.00'	1°25'45"	S16°20'45"W	9.23'
C15	128.14'	370.00'	19°50'34"	S25°33'10"W	127.50'
C16	44.27'	370.00'	6°51'21"	S38°54'08"W	44.25'
C17	16.28'	430.00'	2°10'11"	S41°14'43"W	16.28'
C18	75.70'	430.00'	10°05'13"	S35°07'00"W	75.60'
C19	75.70'	430.00'	10°05'13"	S25°01'47"W	75.60'
C20	75.70'	430.00'	10°05'13"	S14°58'34"W	75.60'
C21	75.70'	430.00'	10°05'13"	S04°51'21"W	75.60'
C22	75.70'	430.00'	10°05'13"	S05°13'53"E	75.60'
C23	26.72'	430.00'	3°33'37"	S12°03'18"E	26.72'
C24	36.69'	430.00'	4°53'22"	S18°16'47"E	36.68'
C25	66.22'	430.00'	8°49'24"	S23°08'10"E	66.15'
C26	66.22'	430.00'	8°49'24"	S31°57'34"E	66.15'
C27	66.22'	430.00'	8°49'24"	S40°46'59"E	66.15'
C28	66.22'	430.00'	8°49'24"	S49°36'23"E	66.15'
C29	66.22'	430.00'	8°49'24"	S58°25'48"E	66.15'
C30	88.48'	430.00'	11°47'15"	S68°44'07"E	88.31'
C31	70.00'	430.00'	9°19'40"	S79°17'35"E	69.93'
C32	56.16'	430.00'	7°29'00"	S87°41'55"E	56.12'
C33	41.73'	430.00'	5°33'40"	N85°46'45"E	41.72'
C34	20.00'	430.00'	2°39'55"	N81°39'58"E	20.00'
C35	56.74'	430.00'	7°33'39"	N76°33'11"E	56.70'
C36	56.74'	430.00'	7°33'39"	N68°59'31"E	56.70'
C37	56.74'	430.00'	7°33'39"	N61°25'52"E	56.70'
C38	56.74'	430.00'	7°33'39"	N53°52'12"E	56.70'
C39	56.74'	430.00'	7°33'39"	N46°18'33"E	56.70'
C40	56.74'	430.00'	7°33'39"	N38°44'53"E	56.70'
C41	56.74'	430.00'	7°33'39"	N31°11'14"E	56.70'
C42	56.74'	430.00'	7°33'39"	N23°37'34"	56.70'
C43	56.74'	430.00'	7°33'39"	N16°03'55"E	56.70'
C44	56.74'	430.00'	7°33'39"	N08°30'15"E	56.70'
C45	56.74'	430.00'	7°33'39"	N00°56'36"E	56.70'
C46	82.49'	370.00'	12°46'25"	S01°13'28"W	82.32'
C47	89.01'	370.00'	13°47'03"	S14°30'12"W	88.80'
C48	89.01'	370.00'	13°47'03"	S28°17'15"W	88.80'
C49	89.01'	370.00'	13°47'03"	S42°04'18"W	88.80'
C50	89.01'	370.00'	13°47'03"	S55°51'21"W	88.80'
C51	89.01'	370.00'	13°47'03"	S69°38'24"W	88.80'
C52	77.67'	370.00'	12°01'39"	S82°32'45"W	77.53'
C53	79.07'	370.00'	12°14'43"	N85°19'05"W	78.92'
C54	103.94'	370.00'	16°05'44"	N71°08'52"W	103.60'
C55	103.94'	370.00'	16°05'44"	N55°03'07"W	103.60'
C56	103.94'	370.00'	16°05'44"	N38°57'23"W	103.60'
C57	103.94'	370.00'	16°05'44"	N22°51'38"W	103.60'
C58	93.34'	370.00'	14°27'15"	N06°36'29"W	93.09'
C59	118.91'	370.00'	18°24'50"	N09°49'24"E	118.40'
C60	123.03'	370.00'	19°03'05"	N29°33'11"E	122.46'
C61	51.40'	625.00'	4°42'44"	S50°01'34"E	51.39'
C62	67.34'	625.00'	6°10'24"	S55°28'08"E	67.31'
C63	67.34'	625.00'	6°10'24"	S61°38'32"E	67.31'
C64	67.34'	625.00'	6°10'24"	S67°48'56"E	67.31'
C65	67.34'	625.00'	6°10'24"	S73°59'20"E	67.31'
C66	67.34'	625.00'	6°10'24"	S80°09'44"E	67.31'
C67	67.34'	625.00'	6°10'24"	S86°20'08"E	67.31'
C68	66.15'	625.00'	6°03'51"	N87°32'45"E	66.12'
C69	86.98'	575.00'	8°40'03"	S88°50'51"W	86.90'
C70	88.55'	575.00'	8°49'24"	N82°24'25"W	88.46'
C71	88.55'	575.00'	8°49'24"	N73°35'01"W	88.46'
C72	88.55'	575.00'	8°49'24"	N64°45'36"W	88.46'
C73	88.55'	575.00'	8°49'24"	N55°56'12"W	88.46'
C74	38.69'	575.00'	3°51'18"	N49°35'51"W	38.68'
C75	6.31'	370.00'	0°58'40"	S14°19'26"E	6.31'

LEGEND:

●	IRON ROD WITH CAP FOUND
○	IRON ROD WITH CAP SET
✱	COTTON SPINDLE SET
▲	MAG NAIL SET
⊠	CONCRETE MONUMENT SET
D.E.	DRAINAGE ESMT.
W.L.E.	WATER LINE ESMT.
W.W.E.	WASTEWATER EASEMENT
. . . . .	SIDEWALK LOCATION
O.P.R.H.C.T.	OFFICIAL PUBLIC RECORDS HAYS COUNTY, TEXAS

BM-CM-1
Iron rod found in concrete southeast of the north corner of Lot 41, Block B, Belterra Phase 4, Section 18.
Elevation = 1111.53' (NGVD 29)

TBM-4
"a" cut in concrete of electric transformer pad, north side of Belterra Blvd., 76'+/- SE of southeast corner of Lot 12, Block B Belterra Phase 4, Section 19B
Elevation = 1141.30' (NGVD 29)

PROJECT:	BELTERRA SECTION 21-2 FINAL PLAT
JOB NUMBER:	2014-102
DATE:	MAY 2016
SCALE:	1" = 100'
SURVEYOR:	PAUL C. SAUVE, JR. RPLS 2518
TECHNICIAN:	PC
DRAWING:	
DESCRIPTION:	N/A
PARTYCHIEF:	JC
FIELDBOOKS:	Belterra

Texas Engineering Solutions

3815 S. CAPITAL OF TEXAS HWY
SUITE 300
AUSTIN, TEXAS 78704
O: 512-904-0505
F: 512-904-0509
TBPE NO. 11206

AUSTIN SPATIAL TECHNOLOGIES, LLC
LAND SURVEYORS - GEOMATIC SPECIALISTS
www.austinspatial.com PN: 512-294-0284

BELTERRA SECTION 21-2

SHEET 5 OF 5

EROSION AND SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY EROSION CONTROL MEASURES PRIOR TO ANY STREET, STORM SEWER OR OTHER UTILITY EXCAVATION. THE PLACEMENT OF SUCH CONTROLS SHALL BE IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PLANS. ACTUAL LOCATIONS MAY VARY SLIGHTLY FROM THE PLANS BUT WILL BE VERIFIED BY THE PROJECT ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INSPECT THE CONTROLS WEEKLY AND AFTER EVERY SIGNIFICANT RAINFALL TO INSURE THAT THEY HAVE NOT BEEN SIGNIFICANTLY DISTURBED. ANY SEDIMENT THAT HAS ACCUMULATED AFTER A SIGNIFICANT RAINFALL SHALL BE REMOVED AND PLACED IN A DESIGNATED SPOIL DISPOSAL SITE. THE OWNER SHALL CONDUCT ONGOING INSPECTIONS OF ALL EROSION/SEDIMENTATION CONTROL METHODOLOGIES AND DIRECT THE PERSON OR FIRM RESPONSIBLE FOR THE MAINTENANCE TO MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH METHODOLOGY.

2. ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW (FOR SPECIFICS REFERENCE CITY OF AUSTIN STANDARD SPECIFICATIONS - SERIES 600, ENVIRONMENTAL ENHANCEMENT). A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DISTURBED AREAS (EXCEPT ROCK) AND BETWEEN THE SHOULDER AND THE R.O.W.

THE CONTRACTOR SHALL HYDROMULCH OR SOD ALL CUTS AND FILL UPON COMPLETION OF CONSTRUCTION, EXCEPT WHERE CUTS ARE MADE IN SOLID ROCK. THE SEEDING OR EROSION CONTROL SHALL BE APPLIED AT THE SPECIFIC RATE OVER AREAS DISTURBED BY CONSTRUCTION AS FOLLOWS:

FROM SEPTEMBER 15 TO MARCH 1, SEEDING SHALL BE WITH A COMBINATION OF 1 POUND PER 1000 SQUARE FEET OF UNHULLED BERMUDA AND 1 POUND PER 1000 SQUARE OF WINTER RYE WITH A PURITY OF 95% GERMINATION.

FROM MARCH 1 TO SEPTEMBER 15, SEEDING SHALL BE WITH A HULLED
BERMUDA GRASS (CYNODENYN DACTOLYN) AT A RATE OF 1 POUND PER 1000 SQUARE FEET WITH A PURITY OF 95% WITH 85% GERMINATION.

FERTILIZER SHALL HAVE AN ANALYSIS OF 15-15-15 AND SHALL BE APPLIED TO A RATE OF 1 LB. PER 1000 SQUARE FEET. MULCH TYPE TO BE STRAW OR HAY APPLIED AT A RATE OF 500 POUNDS PER ACRE. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS REACHED A HEIGHT OF AT LEAST 1-1/2" (95%) COVERAGE AND NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST.

3. THE SEEDED OR PLANTED AREA IS TO BE IRRIGATED OR SPRINKLED IN A MANNER WHICH WILL NOT ERODE THE TOPSOIL BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN DAY INTERVALS FOR THE FIRST TWO MONTHS. RAINFALL OCCURRENCES OF AT LEAST 1/2 INCH SHALL POSTPONE THE WATERING OPERATIONS FOR ONE WEEK.

4. WHEN REQUIRED, NATIVE GRASS SEEDING SHALL COMPLY WITH SECTION 604.6 (NATIVE GRASS SEEDING) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS - SERIES 600, ENVIRONMENTAL ENHANCEMENT.

5. INDIVIDUAL HOMEBUILDER IS RESPONSIBLE FOR ESC DURING HOME CONSTRUCTION.

PAVEMENT DESIGN NOTES:

STREETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MLALABS, INC. GEOTECHNICAL ENGINEER'S INVESTIGATIONS & RECOMMENDATIONS, WHICH ARE:

STREET CLASSIFICATION	SUBGRADE MATERIAL (IN)	HMAC (IN)	CRUSHED LIMESTONE BASE (IN)	LOW PLASTICITY SUB-BASE (IN)	LIME STABILIZED SUBGRADE (IN)	GEOGRID OR 10' MOISTURE BARRIER
LOCAL STREETS						
> 2 FEET OF EXPANSIVE SUBGRADE PI>25	2	8	18	-	8	X*
> 2 FEET OF EXPANSIVE SUBGRADE PI>25	2	8	-	-	8	X*
< 2 FEET OF EXPANSIVE SUBGRADE PI>25	2	8	-	-	-	-
RESIDENTIAL COLLECTOR						
> 2 FEET OF EXPANSIVE SUBGRADE PI>25	2	10	18	-	-	X*
> 2 FEET OF EXPANSIVE SUBGRADE PI>25	2	10	-	-	8	X*
< 2 FEET OF EXPANSIVE SUBGRADE PI>25	2	10	-	-	-	-

NOTE: MESA VERDE DRIVE SHALL BE CONSIDERED A RESIDENTIAL COLLECTOR STREET. ANGELINA VALLEY DRIVE SHALL BE CONSIDERED A LOCAL STREET.

1. *WHERE MORE THAN 2 FEET OF EXPANSIVE SUBGRADE EXISTS AFTER ROUGH CUT OF THE STREETS, ONE OF THE TWO FOLLOWING OPTIONS MUST BE EMPLOYED. THIS IS A REQUIREMENT OF THE HAYS COUNTY STANDARD SPECIFICATIONS.
OPTION 1: A SINGLE LAYER OF BIAXIAL GRID MEETING TXDOT STANDARD DMS 6240 TYPE II SHOULD BE PLACED BELOW THE CRUSHED LIMESTONE BASE LAYER.
OPTION 2: A MOISTURE BARRIER SHOULD EXTEND HORIZONTALLY FROM THE BACK OF THE CURB A MINIMUM OF 10 FEET.

2. ANY EXPANSIVE FILL (PI > 25) PLACED IN THE SUBGRADE SHALL BE CONSIDERED EXPANSIVE SUBGRADE

3. THE PRIMARY PAVEMENT DESIGN OPTION FOR AREAS WITH MORE THAN 2 FEET OF EXPANSIVE CLAY SHALL BE THE 50% INCREASE IN CRUSHED LIMESTONE BASE LAYER AND A STANDARD LENGTH OF SHE-BASE'OPTION SHALL BE CONSIDERED AN ALTERNATE DESIGN.

4. DELINEATION BETWEEN THESE DIFFERENT PAVEMENT THICKNESS SECTIONS SHOULD BE COMPLETED IN THE FIELD BY OBSERVATION OF OPEN UTILITY TRENCHES AND THE PAVEMENT SUBGRADE BY THE GEOTECHNICAL ENGINEER OR HIS DESIGNATE. GIVEN THE KNOWN VARIABILITY OF SURFACE SOILS AT THIS SITE, THE GEOTECHNICAL ENGINEER MUST VERIFY THE SUBGRADE BEFORE INSTALLATION OF THE PAVEMENT SYSTEM CAN PROCEED. MULTIPLE SITE VISITS MAY BE REQUIRED DEPENDING UPON THE CONSTRUCTION SCHEDULE. FINALIZING DISTINCTION BETWEEN PAVEMENT THICKNESS SECTION OPTIONS SHALL BE PROVIDED AS ADDENDUMS TO THIS REPORT AS THESE OBSERVATIONS ARE COMPLETED. PLEASE CONTACT THE GEOTECHNICAL ENGINEER WHEN THE UTILITY TRENCHES ARE OPEN.

5. THE CITY OF AUSTIN RECOMMENDS A 50% INCREASE IN BASE COURSE OR 18 INCHES OF LOW PI SUB-BASE (4<PI<15) TO COMPENSATE FOR THE TENDENCY OF CLAYS TO BE CLASSIFIED AS SOCIAL STREETS.

6. THE SUBGRADE IMPROVEMENT (BE IT A 50% INCREASE IN BASE COURSE OR LOW PLASTICITY SUB-BASE) SHOULD BE EXTENDED 3 FEET BEYOND THE BACK OF THE CURB LINE.

7. THESE PAVEMENT THICKNESS DESIGNS ARE INTENDED TO TRANSFER THE LOAD FROM THE ANTICIPATED TRAFFIC CONDITIONS.

8. THE RESPONSIBILITY OF ASSIGNING STREET CLASSIFICATION TO THE STREETS IN THIS PROJECT IS LEFT TO THE CIVIL ENGINEER. MENDOCINO LANE AND LAVACA HEIGHTS DRIVE SHALL BE CLASSIFIED AS LOCAL STREETS.

9. IF PAVEMENT DESIGNS OTHER THAN THOSE LISTED ABOVE ARE DESIRED, PLEASE CONTACT MLA LABS, INC.

10. WHERE SUBGRADE FIELD CONDITIONS DIFFER FROM CONDITIONS DESCRIBED IN THE GEOTECHNICAL ENGINEER'S REPORT, THE CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO PLACEMENT OF BASE MATERIAL. ANY HIGH P.I. SUBGRADE (PI>25) SHALL BE REMOVED AND REPLACED WITH SUBGRADE MATERIAL THAT IS PI<25.

SIDEWALK NOTES:

1. SIDEWALK ASSIGNMENTS MAY VARY IN RIGHT-OF-WAY AS DIRECTED BY OWNER. PAYMENT SHALL BE MADE PER LINEAR FOOTAGE INSTALLED AS ARRANGED BY OWNER. THE BID PRICE SHALL INCLUDE ANY CURVATURE OF SIDEWALKS AS VARIED FROM PLANS AS REQUESTED BY OWNER. BROOM FINISH SIDEWALK (SEE STREET DETAIL SHEET) SHALL BE PROVIDED UNLESS OTHERWISE NOTED IN FIELD FOR APPROVAL BY OWNER MAY BE BY OTHER LAYOUT PREPARED BY LANDSCAPE ARCHITECT NOT INCLUDED IN THESE PLANS. CONTRACTOR TO COORDINATE WITH OWNER TO OBTAIN APPROVAL OF THE SIDEWALK LAYOUT PRIOR TO CONSTRUCTION.

2. ALL SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF LICENSING AND REGULATION REQUIREMENTS.

3. PASSING SPACES TO BE PROVIDED ON SIDEWALKS AT A DISTANCE NOT TO EXCEED 200'. THE PASSING SPACE SHOULD BE A MINIMUM 5' WIDTH BY 5' LENGTH WITH A 2% CROSS SLOPE.

4. SIDEWALKS MAY BE ADJUSTED TO AVOID TREES WITH APPROVAL OF THE OWNER AND ENGINEER.

FRENCH DRAIN NOTES:

1. FRENCH DRAINS MAY BE REQUIRED TO INTERCEPT GROUND WATER IF GROUND WATER IS ENCOUNTERED DURING CONSTRUCTION. IF GROUND WATER IS ENCOUNTERED PLEASE CONTACT THE GEOTECHNICAL AND CIVIL ENGINEERS.

2. CONTRACTOR TO PROVIDE ARMOR PROTECTION FOR FRENCH DRAIN OUTFALLS (i.e.CONCRETE).

3. CONTRACTOR TO PROVIDE AS-BUILT INFORMATION OF LOCATION AND LIMITS OF FRENCH DRAINS INSTALLED, AND LOCATIONS OF DISCHARGE TIE IN TO STORM DRAINS.

TRENCH SAFETY

1. IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U.S. OPERATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ALL TRENCHES OVER 5 FEET IN DEPTH IN EITHER HARD AND COMPACT OR SOFT AND UNSTABLE SOIL SHALL BE SLOPED, SHORED, SHEETED, BRACED OR OTHERWISE SUPPORTED. FURTHERMORE, ALL TRENCHES LESS THAN 5 FEET IN DEPTH SHALL ALSO BE EFFECTIVELY PROTECTED WHEN HAZARDOUS GROUND MOVEMENT MAY BE EXPECTED.

2. IN ACCORDANCE WITH THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, WHEN EMPLOYEES ARE REQUIRED TO BE IN TRENCHES 4-FEET DEEP OR MORE, ADEQUATE MEANS OF EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.

3. IF TRENCH SAFETY SYSTEM DETAILS WERE NOT PROVIDED IN THE PLANS BECAUSE TRENCHES WERE ANTICIPATED TO BE LESS THAN 5 FEET IN DEPTH AND DURING CONSTRUCTION IT IS FOUND THAT TRENCHES ARE IN FACT 5 FEET OR MORE IN DEPTH OR TRENCHES LESS THAN 5 FEET IN DEPTH ARE IN AN AREA WHERE HAZARDOUS GROUND MOVEMENT IS EXPECTED, ALL CONSTRUCTION SHALL CEASE, THE TRENCHED AREA SHALL BE BARRICADED AND THE ENGINEER NOTIFIED IMMEDIATELY. CONSTRUCTION SHALL NOT RESUME UNTIL APPROPRIATE TRENCH SAFETY SYSTEM DETAILS, AS DESIGNED BY A PROFESSIONAL ENGINEER, ARE SUBMITTED TO AND ACCEPTED BY THE MUNICIPALITY.

4. FOR SLOPES OR TRENCHES MORE THAN FIVE (5) FEET IN DEPTH, ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). COPIES OF THE OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE, INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 611 E. 6TH STREET, AUSTIN, TEXAS.

SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY EROSION CONTROLS PRIOR TO ANY SITE CLEARING AND GRUBBING.
2. CONSTRUCT (ROUGH CUT) POND TO ACT AS A SEDIMENT TRAP.
3. ROUGH GRADE STREETS. (3.74ac)
4. ROUGH GRADE SECONDARY ACCESS DRIVE. (2.71ac)
5. INSTALL ALL UTILITIES TO BE LOCATED UNDER THE PROPOSED PAVEMENT.
6. BEGIN INSTALLATION OF STORM SEWER LINES. UPON COMPLETION, RESTORE AS MUCH DISTURBED AREA AS POSSIBLE, PARTICULARLY CHANNELS AND LARGE OPEN AREAS.
7. REGRADE STREETS TO SUBGRADE. (3.74ac)
8. INSURE THAT ALL UNDERGROUND UTILITY CROSSINGS ARE COMPLETED. LAY FIRST COURSE BASE MATERIAL ON ALL STREETS.
9. INSTALL CURB, GUTTER, AND CURB RAMPS.
10. LAY FINAL BASE COURSE ON ALL STREETS. (3.74ac)
11. LAY ASPHALT. (3.17ac)
12. COMPLETE ALL UNDERGROUND INSTALLATIONS WITHIN THE RIGHT-OF-WAY.
13. CLEAN SEDIMENT FROM PONDS AND COMPLETE AS PER PLANS.
14. COMPLETE PERMANENT EROSION CONTROL AND RESTORATION OF SITE VEGETATION.
15. REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROLS.
16. COMPLETE ANY NECESSARY FINAL DRESS UP OF AREAS DISTURBED.

GENERAL ENGINEERING NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF AUSTIN. CITY OF AUSTIN STANDARD SPECIFICATIONS SHALL GOVERN CONSTRUCTION WHERE NO OTHER REQUIREMENTS EXIST.

2. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY OF DRIPPING SPRINGS, THE CONSULTING ENGINEER, OWNER, COUNTY INSPECTOR, HAYS COUNTY WCID NO. 2, TCEQ AND ANY OTHER AFFECTED PARTIES. NOTIFY ALL SUCH PARTIES AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

3. THE CONTRACTOR SHALL GIVE THE CITY/COUNTY/DISTRICT AND THE ENGINEER 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.

4. ANY EXISTING PAVEMENT, CURBS AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE BEFORE ACCEPTANCE OF THE SUBDIVISION.

5. THE LOCATION OF ANY WATER AND/OR WASTEWATER LINES OR OTHER UTILITIES TO BE CROSSED OR CONNECTED SHALL BE VERIFIED BY THE CONTRACTOR AT THE TIME OF COMMENCEMENT OF CONSTRUCTION.

6. MANHOLE FRAMES, COVERS, AND WATER VALVES SHALL BE SET TO FINISHED PAVEMENT GRADE BY THE UTILITY CONTRACTOR. ALL UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO FINAL PAVING CONSTRUCTION. COMPENSATION FOR UTILITY ADJUSTMENTS SHALL BE PAID FOR IN THE UNIT BID PRICE FOR EACH APPURTENANCE. NO ADDITIONAL PAYMENT WILL BE MADE FOR UTILITY ADJUSTMENTS.

7. CONTRACTOR SHALL VERIFY EXACT DEPTH AND LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, DRIVEWAYS, PAVEMENT, CURB & GUTTER, SIDEWALKS, ETC. SHALL BE REPAIRED BY THE CONTRACTOR, OR THE UTILITY, AT UTILITY'S OPTION, AND SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND BEFORE ACCEPTANCE OF THE SUBDIVISION.

8. ALL WATER MAINS SHALL HAVE A MINIMUM 42 INCHES OF COVER FROM FINISHED/NATURAL GRADE OR 36 INCHES BELOW ACTUAL SUBGRADE UNLESS OTHERWISE DENOTED ON THE PLANS.

9. CONTACT SHALL BE MADE TO TES, CMA, AND STS 48 HOURS PRIOR TO CONNECTION TO EXISTING WATER AND/OR WASTEWATER LINES.

10. ALL FILL AREAS UNDER PROPOSED ROAD AND OVER ALL UTILITIES, SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY IN ACCORDANCE WITH TEX 113-E METHOD.

11. WATER AND WASTEWATER ALIGNMENTS SHOWN ON THE PLANS SHOULD BE ACHIEVED BY DEFLECTION WITHIN THE MANUFACTURER'S SPECIFICATIONS, EXCEPT WHERE SPECIFIC FITTINGS ARE CALLED FOR ON THE PLANS. IF FITTINGS ARE REQUIRED WHERE NOT SHOWN ON THE PLANS, THERE WILL BE NO ADDITIONAL PAY.

12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES, INCLUDING BUT NOT LIMITED TO, GAS LINES, WATERLINES, VALVE BOXES, FIRE HYDRANTS, STRUCTURES, AND OTHER APPURTENANCES THAT LIE WITHIN THE RIGHT-OF-WAY OR EASEMENTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ALL UTILITIES, DRIVEWAYS, PAVEMENT, CURB & GUTTER, SIDEWALKS, FENCES, AND ANY OTHER ITEMS DAMAGED DURING CONSTRUCTION REGARDLESS OF WHETHER ALL ITEMS ARE SHOWN ON THE PLANS AT HIS SOLE EXPENSE. THE LOCATION OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES IS APPROXIMATE. IN ADDITION TO NORMAL PRECAUTIONS, WHEN EXCAVATING, TAKE EXTRA CAUTION WHEN EXCAVATING WITHIN 25 FT. OF ANY UTILITIES SHOWN ON THE PLANS.

13. WHENEVER EXISTING UTILITIES, NOT INDICATED ON THE PLANS, PRESENT OBSTRUCTIONS TO GRADE AND ALIGNMENT OF PIPE, IMMEDIATELY NOTIFY TES, CMA, AND STS WHO WILL DETERMINE WHENEVER EXISTING IMPROVEMENTS ARE TO BE RELOCATED, OR GRADE AND ALIGNMENT OF PIPE CHANGED. WHERE NECESSARY TO MOVE SERVICES, POLES, GUY WIRES, PIPELINES, ETC., AS DETERMINED BY THE ENGINEERS, THE CONTRACTOR WILL MAKE ARRANGEMENTS WITH THE OWNER OF THE UTILITY TO BE MOVED AND HAVE IT MOVED. THE COST OF ANY UTILITY RELOCATION WILL BE AT THE CONTRACTOR'S SOLE EXPENSE. OWNER WILL NOT BE LIABLE FOR RELOCATION COSTS OF DAMAGES ON ACCOUNT OF DELAYS DUE TO CHANGES MADE BY OWNERS OF OTHER PRIVATELY OR PUBLICLY OWNED UTILITIES WHICH HINDER PROGRESS OF THE WORK.

14. CONTRACTOR INCLUDE ADDITIONAL FLUSHING VALVES AND TEST CONNECTIONS NECESSARY TO PERFORM TEST AND STERILIZATION OPERATION. THERE WILL BE NO ADDITIONAL PAY FOR THESE VALVES AND CONNECTIONS USED FOR TESTING AND STERILIZATION PURPOSES, EXCEPT FOR THOSE SPECIFICALLY SHOWN ON THE PLANS.

15. ALL CONSTRUCTION ACTIVITIES, INCLUDING ACCESS, EGRESS, TRAVEL, STOCKPILING, ETC. ARE TO BE CONFINED TO AREAS IDENTIFIED BY THE OWNER.

16. ALL EXCESS SPOIL MATERIAL SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK EFFORT.

17. REFER TO THE PLANS FOR DETAILS ON "PIPE BEDDING AND BACKFILL", "CONCRETE ENCASEMENT", "CONCRETE THRUST BLOCKING", AND "HORIZONTAL AND VERTICAL BENDS", "FIRE HYDRANT ASSEMBLY", AND OTHER DETAILS.

18. TREE DAMAGES AND CLEARING OUTSIDE THE RIGHT-OF-WAY OR EASEMENTS ARE EXPRESSLY PROHIBITED.

19. PIPE, FITTINGS AND JOINTS: WATER - PVC DR 18, C-900, WITH BOLTLESS GASKETED JOINTS AND C.I., M.J. OR FLANGE FITTINGS UNLESS OTHERWISE SHOWN ON THE PLANS, GRAVITY SEWER - PVC SDR-26 WITH BOLTLESS GASKETED JOINTS, UNLESS OTHERWISE SHOWN ON THE PLANS. FIRE HYDRANT LEAD - DUCTILE IRON, CLASS 50, MECHANICAL JOINTS AND C.I. (D.I. ENDS) FITTINGS, UNLESS OTHERWISE SHOWN ON THE PLANS.

20. ALL GATE VALVES SHALL HAVE RESILIENT VALVE SEATS.

21. THE EXACT LOCATION OF GATE VALVES SHALL BE AT P.C. OF THE CURB AT INTERSECTIONS OR 4 FT. FROM FIRE HYDRANT IF THE SAME LOCATION.

22. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM OF 8 MIL POLYETHYLENE WRAP.

23. AT ALL LOCATIONS WHERE A WATERLINE CROSSES A WASTEWATER LINE, THE CONSTRUCTION SHALL STRICTLY COMPLY WITH ALL APPLICABLE RULES AND REGULATIONS OF THE TCEQ.

24. THE CONTRACTOR SHALL FURNISH THE ENGINEER AND OWNER ONE SET OF "AS-BUILT" PLANS REFLECTING ALL CHANGES MADE IN THE FIELD.

25. THE ENGINEER SHALL BE GIVEN 48 HOURS NOTICE PRIOR TO ANY TESTING PHASE (DENSITY, PRESSURE, LEAKAGE, ETC.).

26. THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL NECESSARY TO PERFORM THE CONSTRUCTION IN A SAFE MANNER TO PROTECT THE PUBLIC SAFETY. NO SEPARATE PAY.

27. THE COST OF ALL FITTINGS SHALL BE INCLUDED IN THE PER FOOT UNIT COST OF PIPE.

28. THE CONTRACTOR SHALL PROVIDE PLUGS AT ALL PIPE STUB-OUTS. NO SEPARATE PAY.

29. THE CONTRACTOR SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR IS RESPONSIBLE FOR ASSURING THAT ALL PERMITS NECESSARY TO LEGALLY PERFORM THE WORK HAVE BEEN OBTAINED PRIOR TO COMMENCING CONSTRUCTION. REQUIRED PERMITS THAT CAN BE ISSUED TO THE CONTRACTOR ONLY WILL BE OBTAINED AT THE CONTRACTOR'S EXPENSE.

30. IF BLASTING IS PLANNED BY THE CONTRACTOR, A BLASTING PERMIT MUST BE SECURED PRIOR TO COMMENCEMENT OF ANY BLASTING.

31. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH HAYS COUNTY REQUIREMENTS AND UNIFORM MANUAL OF TRAFFIC CONTROL DEVICES, AND SHALL MATCH THE APPROVED BELTERRA SIGNAGE REQUIREMENTS. C FAULKNER ENGINEERING REPRESENTATIVE TO VERIFY SIGNAGE BASED ON PROVIDED DETAIL BY OWNER.

32. LOT PINS REMOVED, COVERED, OR MOVED DURING CONSTRUCTION SHALL BE RELOCATED AT THE CONTRACTOR'S SOLE EXPENSE, BY A REGISTERED PROFESSIONAL LAND SURVEYOR.

33. THE CITY OF DRIPPING SPRINGS OR ANY OTHER AGENCY LOGO SHALL NOT APPEAR ON ANY MANHOLE LIDS, VALVE BOX COVERS OR ARY OTHER RELATED APPURTENANCE. ALL ITEMS MENTIONED SHALL BE APPROVED AS A SUBMITTAL.

34. NO SAND BEDDING OR BACKFILL WILL BE ALLOWED FOR WATER, WASTEWATER AND STORM SEWER LINES.

35. FILL PLACED ON LOTS SHALL BE DONE IN ACCORDANCE WITH FHA 79G STANDARDS.

36. CONTRACTOR TO VERIFY ANY AND ALL PERMITS TO BURN BRUSH PILES, COORDINATE WITH OWNER.

37. THE CONTRACTOR SHALL POST A NOTICE NEAR THE MAIN ENTRANCE OF THE CONSTRUCTION SITE WITH THE FOLLOWING INFORMATION:

-TPDES PERMIT NUMBER OR A COPY OF THE (NOI) IF THE PERMIT NUMBER HAS NOT YET BEEN ASSIGNED.
-THE NAME AND TELEPHONE NUMBER OF A LOCAL CONTACT PERSON
-A BRIEF DESCRIPTION OF THE PROJECT
-THE LOCATION OF THE SWPPP

HAYS COUNTY CONSTRUCTION NOTES:

1. SEVENTY-TWO (72) HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION, THE DEVELOPER SHALL ARRANGE A PRE-CONSTRUCTION CONFERENCE WITH ALL PERTINENT PARTIES.

2. ALL ROADWAY AND DRAINAGE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HAYS COUNTY SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS FROM HAYS COUNTY ROAD AND BRIDGE DEPARTMENT PRIOR TO BEGINNING ANY ON-SITE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING THE NECESSARY INSPECTIONS FROM THE HAYS COUNTY ROAD AND BRIDGE DEPARTMENT. ALL REPAIRS TO IMPROVEMENTS CAUSED BY CONTRACTOR'S FAILURE TO INSTALL IMPROVEMENTS IN ACCORDANCE WITH HAYS COUNTY SPECIFICATIONS AND THESE CONSTRUCTION PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. HAYS COUNTY ROAD AND BRIDGE DEPARTMENT'S ACCEPTANCE OF THE IMPROVEMENTS ARE CONTINGENT ON REPAIRS BEING MADE TO HAYS COUNTY'S SATISFACTION. DELAYS CAUSED BY REPAIRS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

3. CONTRACTOR SHALL ENSURE THAT VEHICLES LEAVING THE CONSTRUCTION SITE ONTO PUBLICLY MAINTAINED ROADWAYS ARE CLEAR OF MUD AND DEBRIS.

4. NO EXPLOSIVES SHALL BE USED FOR THIS PROJECT WITHOUT TCEQ APPROVAL.

5. ALL HOLES, TRENCHES AND OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY BARRICADES, FENCING, LIGHTS AND/OR OTHER PROTECTIVE DEVICES AT ALL TIMES.

6. CONTRACTOR SHALL COMPLY WITH CONSTRUCTION SEQUENCING WHICH MAY BE SPECIFIED SOMEWHERE IN THE CONSTRUCTION PLANS.

7. PERMIT IS REQUIRED FOR CONSTRUCTION IN 'RIGHT OF WAY' :ORDINANCE 7.10. NO DRIVEWAY, UTILITY CONSTRUCTION, MAILBOXES, LANDSCAPING OR ANY OTHER ENCROACHMENT IN RIGHT-OF-WAY OR EASEMENT SHALL BE ALLOWED WITHOUT FIRST OBTAINING A PERMIT FROM THE HAYS COUNTY ROAD AND BRIDGE DEPARTMENT.

8. PRIOR TO THE INSTALLATION OF ANY ROAD BUILDING MATERIAL THE SUBGRADE SHALL BE INSPECTED BY HAYS COUNTY. PRIOR TO PAVING, BASE MATERIAL SHALL BE INSPECTED BY HAYS COUNTY. THE OWNER OR HIS AGENT SHALL NOTIFY THE HAYS COUNTY ROAD DIRECTOR FORTY-EIGHT (48) HOURS PRIOR TO THE TIME WHEN THE INSPECTION IS NEEDED :ORDINANCE 1.05; 2.06.

9. AT THE TIME A FINAL INSPECTION AND RELEASE OF PERFORMANCE SECURITY IS REQUESTED; THE DESIGN ENGINEER SHALL PROVIDE A COMPLETE SET OF "AS-BUILT" RECORD DRAWINGS IN PDF FORMAT (300DPI) ON A VIRUS FREE DISK AND SHALL CERTIFY THAT ALL ROAD AND DRAINAGE CONSTRUCTION HAS BEEN COMPLETED IN SUBSTANTIAL ACCORDANCE WITH PREVIOUSLY APPROVED PLANS AND SPECIFICATIONS, EXCEPT AS NOTED.
NO PERFORMANCE SECURITY WILL BE RELEASED WITHOUT THESE EXHIBITS.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY CONTRIBUTING ZONE PLAN GENERAL CONSTRUCTION NOTES:

1. WRITTEN CONSTRUCTION NOTIFICATION SHOULD BE PROVIDED TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION SHOULD INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR WITH THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.

3. NO TEMPORARY ABOVE GROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM MAY BE INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL.

4. PRIOR TO COMMENCING CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE SWPPP SECTION OF THE EDWARDS AQUIFER CONTRIBUTING ZONE PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.

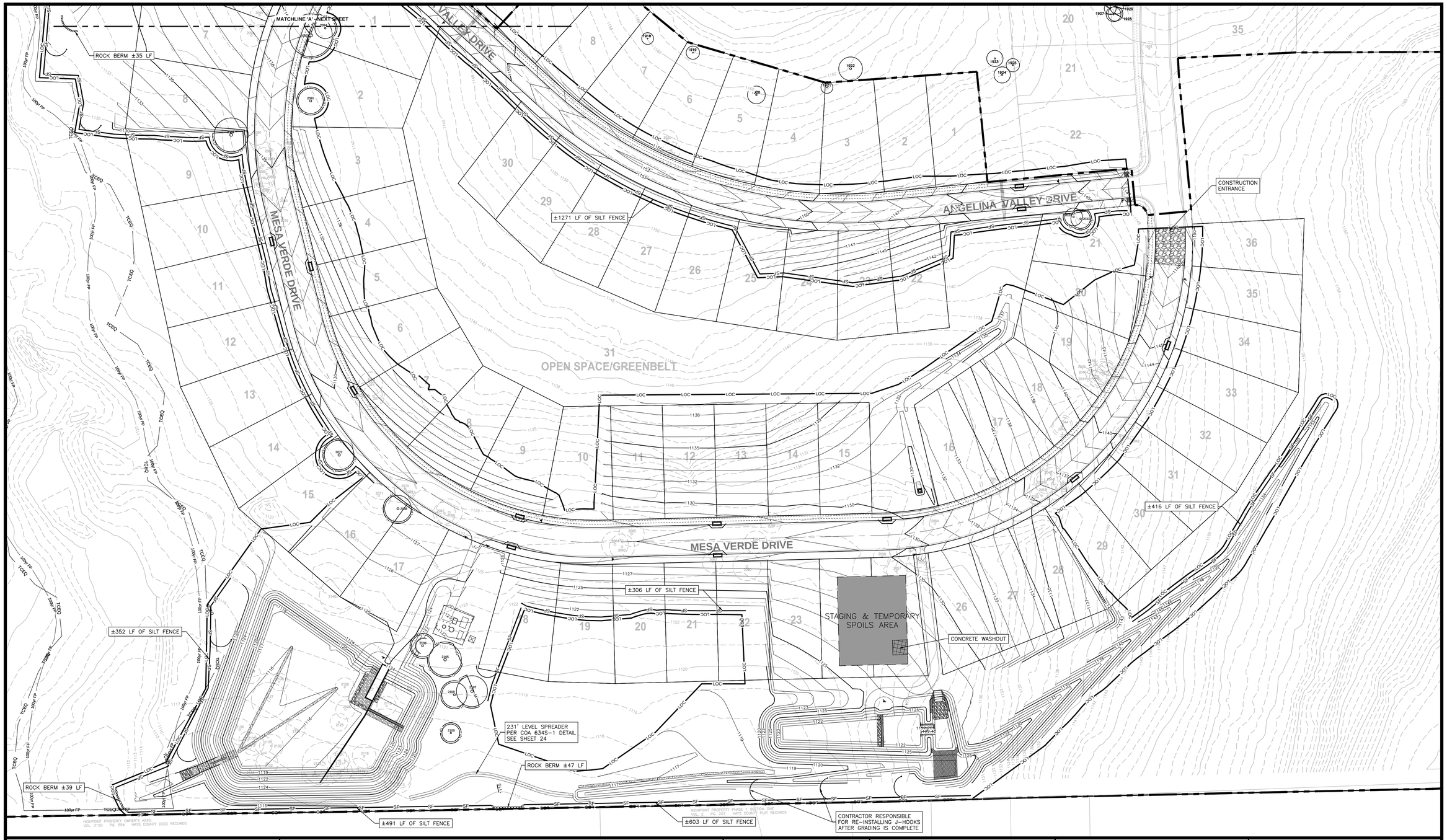
5. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).

6. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.

7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORM WATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORM WATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).

8. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE AND STORED ON-SITE MUST HAVE PROPER E&S CONTROLS INSTALLED.

9. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACT



NOTES

1. LIMITS OF CONSTRUCTION: 30.10 ACRES
2. THE CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL, SECTION 1.4.5.D.
3. ALL AREA INLETS SHALL HAVE INLET PROTECTION IN PLACE UNTIL THE COMPLETION OF GRADING AND REVEGETATION.
4. THE HAYS COUNTY AND CODS INSPECTORS HAVE THE AUTHORITY TO MODIFY EROSION/SEDIMENTATION CONTROLS AS REQUIRED TO ENSURE THE CONTROLS ARE FUNCTIONING PROPERLY.
5. ANY DIRT, MUD, ROCKS OR OTHER DEBRIS CARRIED ONTO EXISTING ROADS SHALL BE REMOVED IMMEDIATELY AND THE ROAD RESTORED TO A DRIVABLE CONDITION, FREE FROM OBSTRUCTIONS.
6. WHERE STREET IMPROVEMENTS END ON A GRADE THAT ALLOWS OFFSITE SEDIMENT TO WASH ONTO PAVEMENT, THE CONTRACTOR SHALL INSTALL ROCK BERMS AT THE EDGE OF PAVEMENT, ROCK BERMS SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL ADJACENT PHASE IMPROVEMENTS BEGIN.
7. AT THE COMPLETION OF STREET AND UTILITY IMPROVEMENTS, THE CONTRACTOR SHALL REVEGETATE THE AREAS DISTURBED BY CONSTRUCTION IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE GENERAL NOTES SHEET.
8. IN AREAS WHERE SILT FENCE IS TO BE INSTALLED CROSSING CONTOURS, J-HOOKS SHALL BE ADDED TO THE SILT FENCE EVERY 100'.
9. OFFSITE DISPOSAL OF SPOIL MATERIAL MUST BE CLEARED BY COUNTY INSPECTOR PRIOR TO THE REMOVAL FROM THE JOBSITE.
10. DIRT TRACKED INTO THE ROADWAY OUTSIDE THE LOC MUST BE IMMEDIATELY REMOVED UPON DISCOVERY.
11. CONTRACTOR SHALL ATTEMPT TO REVEGETATE MAJOR AND CRITICAL PORTIONS OF THE PROJECT IN DISCREET PHASES AND AS EARLY AS POSSIBLE.
12. FOR THE STABILIZATION OF ALL THE SLOPES 3:1 OR GREATER, SUITABLE ESC MATTING (TYPE II) WILL BE UTILIZED IN CONJUNCTION WITH REVEGETATIVE EFFORTS ONSITE. (TYPE II) FOR CHANNELS.
13. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR VEGETATION MATTING.
14. ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN-COMPLIANCE WITH CITY OF AUSTIN RULES AND REGULATIONS.
15. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.5 (A), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
16. THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY.
17. FOR OFF-SITE UTILITY LINES- PROVIDE PERPENDICULAR EROSION CONTROLS EVERY 30' AS YOU FINISH LINE.

LEGEND

- 755 — PROPOSED CONTOURS
- 750 — EXISTING CONTOURS
- EX PROPERTY BOUNDARY
- LOC — LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- TP — TREE PROTECTION FENCE
- STAGING & TEMPORARY SPOILS AREA
- STABILIZED CONSTRUCTION ENTRANCE
- INLET PROTECTION
- TEMPORARY ROCK BERM
- J-HOOKS

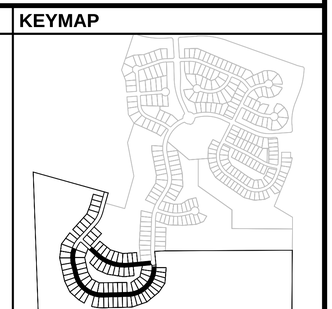
TREE LEGEND

- TREE REMAIN
- TREE REMAIN
- TREE REMOVE

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
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PROFESSIONAL ENGINEER
8/22/17

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F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
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469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

ENVIRONMENTAL PROTECTION SHEET 1 OF 3

T:\Private\Maior\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CPESBELTRA-PH2_SEC21-ESC.dwg

TREE LIST		
1813	10" LIVE OAK MS	TO REMAIN
1814	10" LIVE OAK	TO REMAIN
1815	9" LIVE OAK	TO REMAIN
1816	11" LIVE OAK	TO REMAIN
1817	9" LIVE OAK	TO REMAIN
1818	10" LIVE OAK	TO REMAIN
1819	8" LIVE OAK MS	TO REMAIN
1820	13" LIVE OAK MS	TO BE REMOVED
1821	8" LIVE OAK	TO REMAIN
1822	8" LIVE OAK	TO REMAIN
1823	8" LIVE OAK	TO REMAIN
1824	9" LIVE OAK MS	TO BE REMOVED
1825	8" LIVE OAK	TO BE REMOVED
1826	9" LIVE OAK	TO REMAIN
1827	8" LIVE OAK MS	TO REMAIN
1828	8" LIVE OAK MS	TO REMAIN
1829	9" LIVE OAK MS	TO REMAIN
1830	8" LIVE OAK	TO BE REMOVED
1831	9" LIVE OAK	TO BE REMOVED
1832	11" LIVE OAK MS	TO BE REMOVED
1833	11" LIVE OAK	TO REMAIN
1834	9" LIVE OAK	TO REMAIN
1835	9" LIVE OAK	TO REMAIN
1854	8" LIVE OAK	TO REMAIN
1855	12" LIVE OAK MS	TO BE REMOVED
1856	10" LIVE OAK MS	TO BE REMOVED
1857	8" LIVE OAK MS	TO BE REMOVED
1858	8" LIVE OAK	TO REMAIN
1859	19" LIVE OAK MS	TO REMAIN
1860	9" LIVE OAK	TO BE REMOVED
1861	9" LIVE OAK	TO BE REMOVED
1862	8" LIVE OAK	TO BE REMOVED
1863	10" LIVE OAK MS	TO REMAIN
1864	13" LIVE OAK	TO REMAIN
1865	9" LIVE OAK MS	TO BE REMOVED
1866	17" LIVE OAK	TO BE REMOVED
1867	11" LIVE OAK MS	TO BE REMOVED
1868	9" LIVE OAK	TO BE REMOVED
1869	9" LIVE OAK	TO BE REMOVED
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1871	11" LIVE OAK	TO BE REMOVED
1872	10" LIVE OAK	TO BE REMOVED
1873	9" LIVE OAK	TO BE REMOVED
1874	10" LIVE OAK	TO BE REMOVED
1875	8" LIVE OAK	TO BE REMOVED
1876	10" LIVE OAK	TO BE REMOVED
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1878	8" OAK	TO BE REMOVED
1879	9" LIVE OAK	TO REMAIN
1880	12" LIVE OAK	TO BE REMOVED
1881	14" LIVE OAK	TO BE REMOVED
1882	10" LIVE OAK	TO BE REMOVED
1883	25" LIVE OAK	TO REMAIN
1884	9" LIVE OAK	TO BE REMOVED
1885	9" LIVE OAK	TO BE REMOVED
1886	16" LIVE OAK MS	TO REMAIN
1887	12" LIVE OAK	TO BE REMOVED
1888	9" LIVE OAK	TO BE REMOVED
1889	9" LIVE OAK	TO BE REMOVED
1890	8" LIVE OAK	TO BE REMOVED
1891	8" LIVE OAK	TO BE REMOVED
1892	9" LIVE OAK	TO BE REMOVED
1893	8" LIVE OAK	TO BE REMOVED
1894	9" LIVE OAK	TO BE REMOVED
1895	14" SPANISH OAK	TO BE REMOVED
1896	17" SPANISH OAK	TO BE REMOVED
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1901	15" ELM	TO BE REMOVED
1902	9" OAK	TO BE REMOVED
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1904	10" LIVE OAK	TO REMAIN
1905	10" LIVE OAK	TO BE REMOVED
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1907	8" LIVE OAK	TO BE REMOVED
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1920	12" LIVE OAK MS 10 5	TO REMAIN
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1925	9" LIVE OAK	TO REMAIN
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1927	10" LIVE OAK	TO REMAIN
1928	10" LIVE OAK	TO REMAIN
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1930	25" LIVE OAK	TO REMAIN
1931	10" LIVE OAK	TO REMAIN
1932	8" LIVE OAK	TO REMAIN
2022	15" LIVE OAK	TO BE REMOVED
2023	14" LIVE OAK	TO BE REMOVED
2024	13" LIVE OAK	TO BE REMOVED
2025	14" LIVE OAK	TO BE REMOVED
2026	17" ELM	TO BE REMOVED
2027	17" ELM	TO BE REMOVED
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2030	14" LIVE OAK BEE HIVE	TO BE REMOVED
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2041	12" LIVE OAK	TO BE REMOVED
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2043	19" LIVE OAK	TO BE REMOVED
2044	13" LIVE OAK	TO BE REMOVED
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2049	14" LIVE OAK	TO BE REMOVED
2050	16" LIVE OAK	TO BE REMOVED
2051	15" LIVE OAK	TO BE REMOVED
2052	14" LIVE OAK	TO BE REMOVED
2053	18" LIVE OAK	TO BE REMOVED
2054	16" LIVE OAK	TO BE REMOVED
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2069	15" SPANISH OAK	TO BE REMOVED
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2072	20" LIVE OAK	TO REMAIN
2073	19" LIVE OAK	TO BE REMOVED
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2075	16" LIVE OAK	TO BE REMOVED
2076	12" LIVE OAK	TO REMAIN
2077	30" LIVE OAK MS 20 20	TO BE REMOVED
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2079	12" LIVE OAK	TO BE REMOVED
2080	13" LIVE OAK	TO BE REMOVED
2081	13" LIVE OAK	TO BE REMOVED
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2089	23" LIVE OAK	TO REMAIN
2090	14" LIVE OAK	TO BE REMOVED
2091	17" LIVE OAK	TO REMAIN
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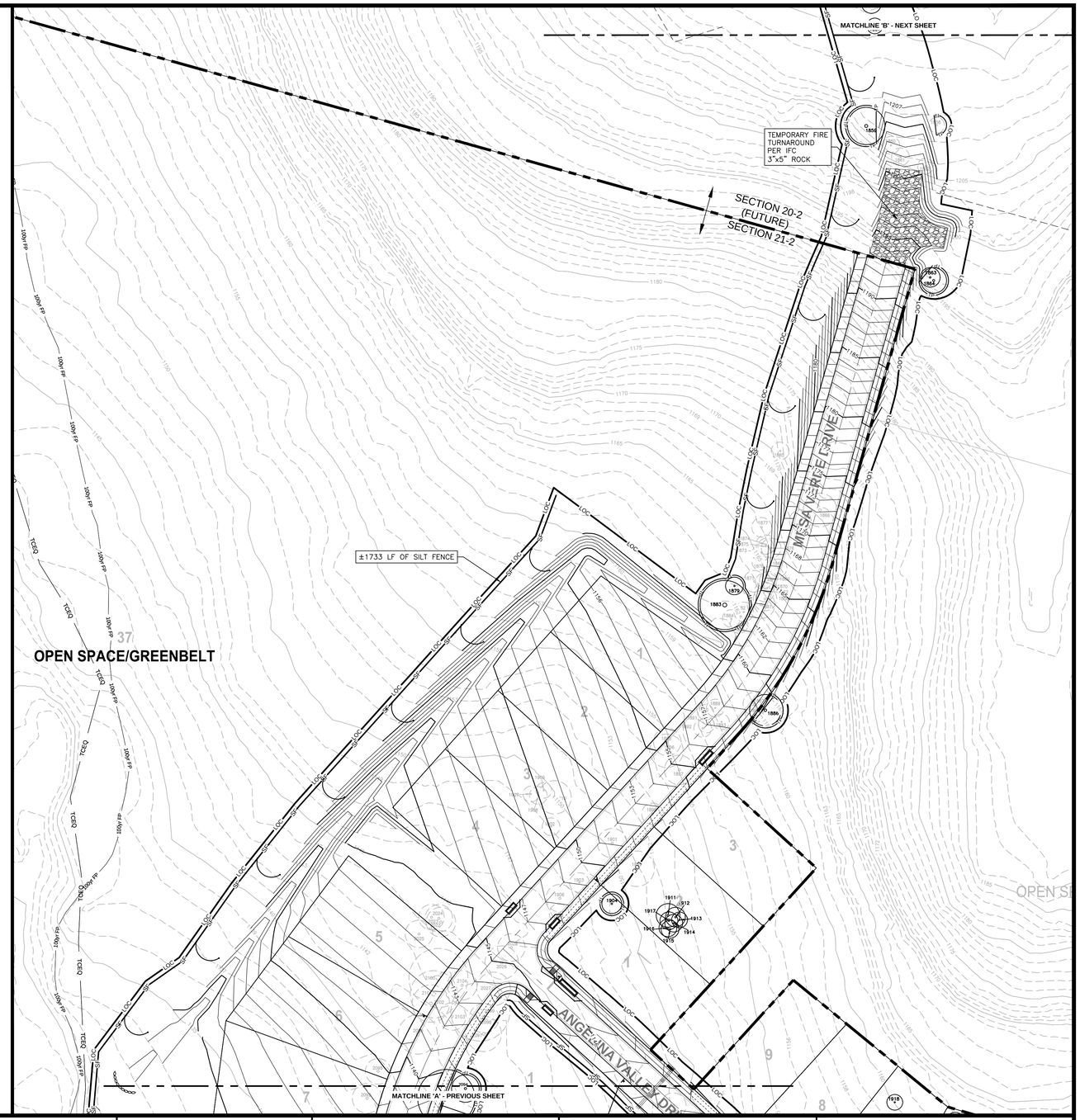
2133	14" LIVE OAK	TO BE REMOVED
2134	15" LIVE OAK	TO BE REMOVED
2135	12" LIVE OAK	TO BE REMOVED
2136	15" LIVE OAK	TO BE REMOVED
2137	24" LIVE OAK MS 17 14	TO BE REMOVED
2138	12" ELM	TO BE REMOVED
2139	13" LIVE OAK	TO BE REMOVED
2140	24" LIVE OAK	TO BE REMOVED



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

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O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

NOTES

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4. THE HAYS COUNTY AND CODS INSPECTORS HAVE THE AUTHORITY TO MODIFY EROSION/SEDIMENTATION CONTROLS AS REQUIRED TO ENSURE THE CONTROLS ARE FUNCTIONING PROPERLY.
5. ANY DIRT, MUD, ROCKS OR OTHER DEBRIS CARRIED ONTO EXISTING ROADS SHALL BE REMOVED IMMEDIATELY AND THE ROAD RESTORED TO A DRIVABLE CONDITION, FREE FROM OBSTRUCTIONS.
6. WHERE STREET IMPROVEMENTS END ON A GRADE THAT ALLOWS OFFSITE SEDIMENT TO WASH ONTO PAVEMENT, THE CONTRACTOR SHALL INSTALL ROCK BERMS AT THE EDGE OF PAVEMENT. ROCK BERMS SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL ADJACENT PHASE IMPROVEMENTS BEGIN.
7. AT THE COMPLETION OF STREET AND UTILITY IMPROVEMENTS, THE CONTRACTOR SHALL REVEGETATE THE AREAS DISTURBED BY CONSTRUCTION IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE GENERAL NOTES SHEET.
8. IN AREAS WHERE SILT FENCE IS TO BE INSTALLED CROSSING CONTOURS, J-HOOKS SHALL BE ADDED TO THE SILT FENCE EVERY 100'.
9. OFFSITE DISPOSAL OF SPOIL MATERIAL MUST BE CLEARED BY COUNTY INSPECTOR PRIOR TO THE REMOVAL FROM THE JOBSITE.
10. DIRT TRACKED INTO THE ROADWAY OUTSIDE THE LOC MUST BE IMMEDIATELY REMOVED UPON DISCOVERY.
11. CONTRACTOR SHALL ATTEMPT TO REVEGETATE MAJOR AND CRITICAL PORTIONS OF THE PROJECT IN DISCREET PHASES AND AS EARLY AS POSSIBLE.
12. FOR THE STABILIZATION OF ALL THE SLOPES 3:1 OR GREATER, SUITABLE ESC MATTING (TYPE I) WILL BE UTILIZED IN CONJUNCTION WITH REVEGETATIVE EFFORTS ONSITE. (TYPE II) FOR CHANNELS.
13. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR VEGETATION MATTING.
14. ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN-COMPLIANCE WITH CITY OF AUSTIN RULES AND REGULATIONS.
15. CONTRACTOR SHALL UTILIZE DUST CONTROL MEASURES DURING SITE CONSTRUCTION SUCH AS IRRIGATION TRUCKS AND MULCHING AS PER ECM 1.4.5 (A), OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
16. THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY.
17. FOR OFF-SITE UTILITY LINES- PROVIDE PERPENDICULAR EROSION CONTROLS EVERY 30' AS YOU FINISH LINE.

LEGEND

- 755 — PROPOSED CONTOURS
- 750 — EXISTING CONTOURS
- EX PROPERTY BOUNDARY
- LOC — LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- TP — TREE PROTECTION FENCE
- STAGING & TEMPORARY SPOILS AREA
- STABILIZED CONSTRUCTION ENTRANCE
- INLET PROTECTION
- TEMPORARY ROCK BERM
- J-HOOKS

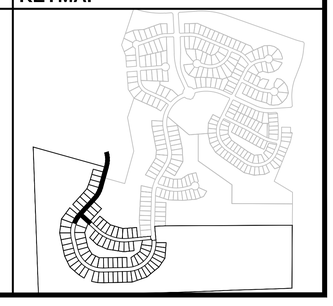
TREE LEGEND

- TREE REMAIN
- TREE REMAIN
- TREE REMOVE

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

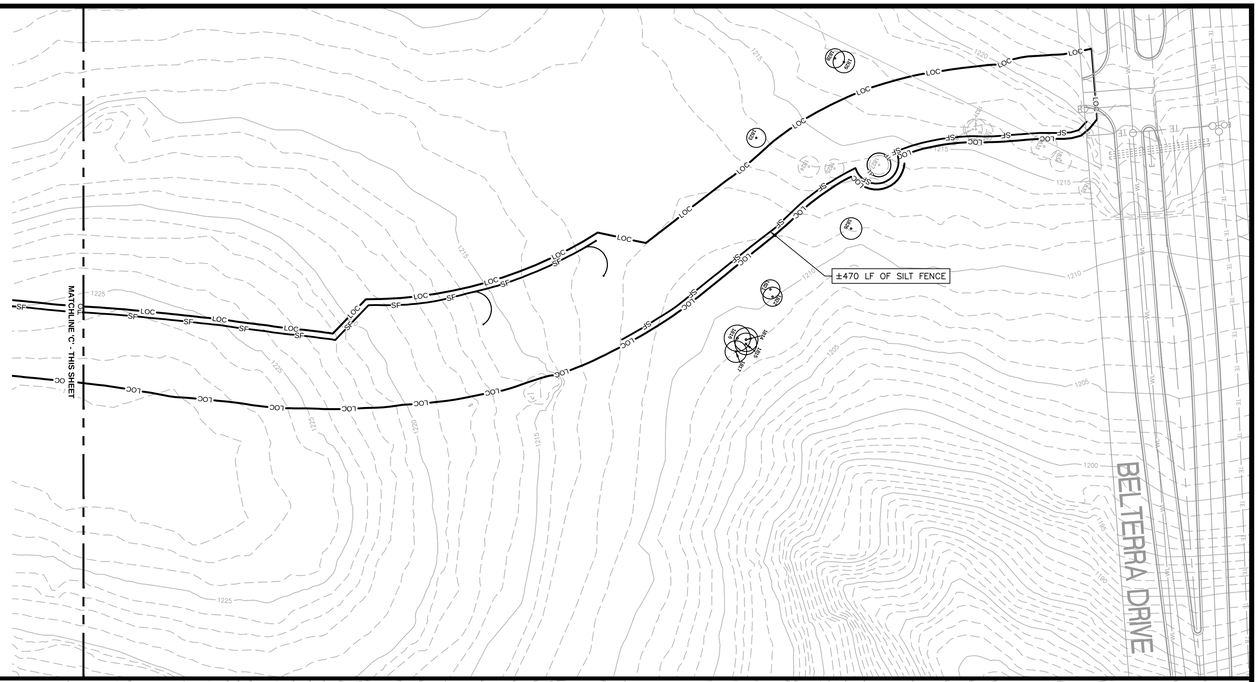
KEYMAP

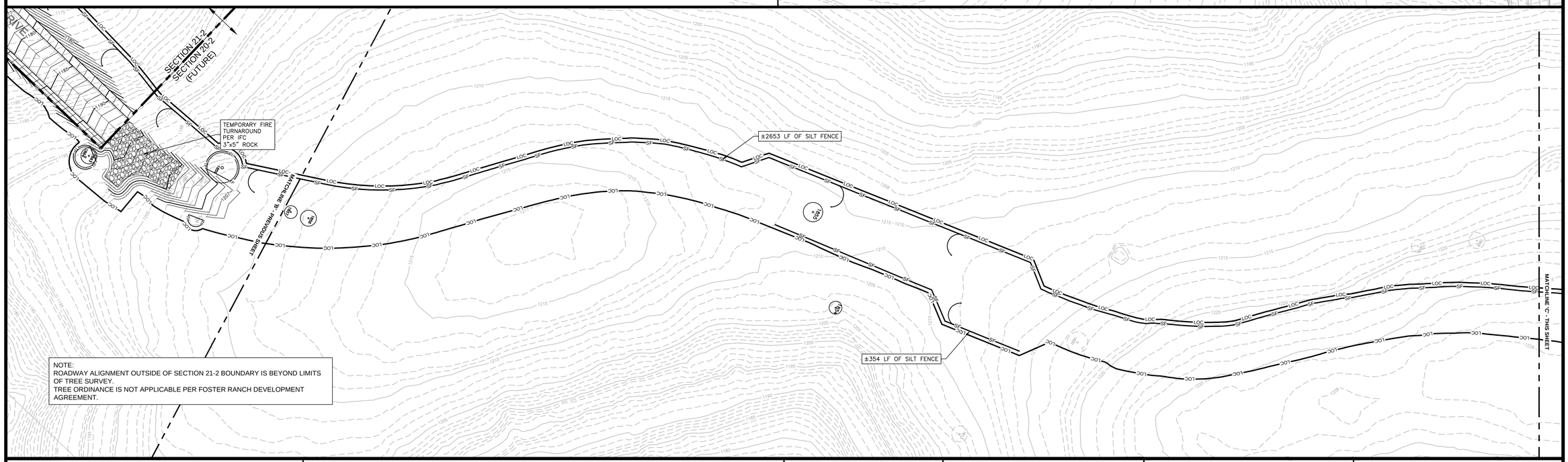


BELTERRA SECTION 21-2

ENVIRONMENTAL PROTECTION SHEET 2 OF 3

T:\Private\Mesa\Crescent Belterra\Design\Ph 2 SEC 21\Site Construction\S-CRESBELTRA-PH2_SEC21-ESC.dwg





NOTE:
ROADWAY ALIGNMENT OUTSIDE OF SECTION 21-2 BOUNDARY IS BEYOND LIMITS OF TREE SURVEY.
TREE ORDINANCE IS NOT APPLICABLE PER FOSTER RANCH DEVELOPMENT AGREEMENT.

NOTES

1. LIMITS OF CONSTRUCTION: 30.10 ACRES
2. THE CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL, SECTION 1.4.5.D.
3. ALL AREA INLETS SHALL HAVE INLET PROTECTION IN PLACE UNTIL THE COMPLETION OF GRADING AND REVEGETATION.
4. THE HAYS COUNTY AND CODS INSPECTORS HAVE THE AUTHORITY TO MODIFY EROSION/SEDIMENTATION CONTROLS AS REQUIRED TO ENSURE THE CONTROLS ARE FUNCTIONING PROPERLY.
5. ANY DIRT, MUD, ROCKS OR OTHER DEBRIS CARRIED ONTO EXISTING ROADS SHALL BE REMOVED IMMEDIATELY AND THE ROAD RESTORED TO A DRIVABLE CONDITION, FREE FROM OBSTRUCTIONS.
6. WHERE STREET IMPROVEMENTS END ON A GRADE THAT ALLOWS OFFSITE SEDIMENT TO WASH ONTO PAVEMENT, THE CONTRACTOR SHALL INSTALL ROCK BERMS AT THE EDGE OF PAVEMENT, ROCK BERMS SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL ADJACENT PHASE IMPROVEMENTS BEGIN.
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8. IN AREAS WHERE SILT FENCE IS TO BE INSTALLED CROSSING CONTOURS, J-HOOKS SHALL BE ADDED TO THE SILT FENCE EVERY 100'.
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11. CONTRACTOR SHALL ATTEMPT TO REVEGETATE MAJOR AND CRITICAL PORTIONS OF THE PROJECT IN DISCREET PHASES AND AS EARLY AS POSSIBLE.
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LEGEND

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- 750 — EXISTING CONTOURS
- EX PROPERTY BOUNDARY
- LOC — LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- TP — TREE PROTECTION FENCE
- STAGING & TEMPORARY SPOILS AREA
- STABILIZED CONSTRUCTION ENTRANCE
- INLET PROTECTION
- TEMPORARY ROCK BERM
- J-HOOKS

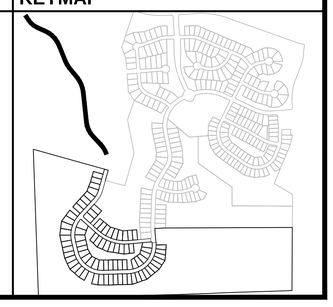
TREE LEGEND

- TREE REMAIN
- TREE REMAIN
- TREE REMOVE

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

ENVIRONMENTAL PROTECTION SHEET 3 OF 3

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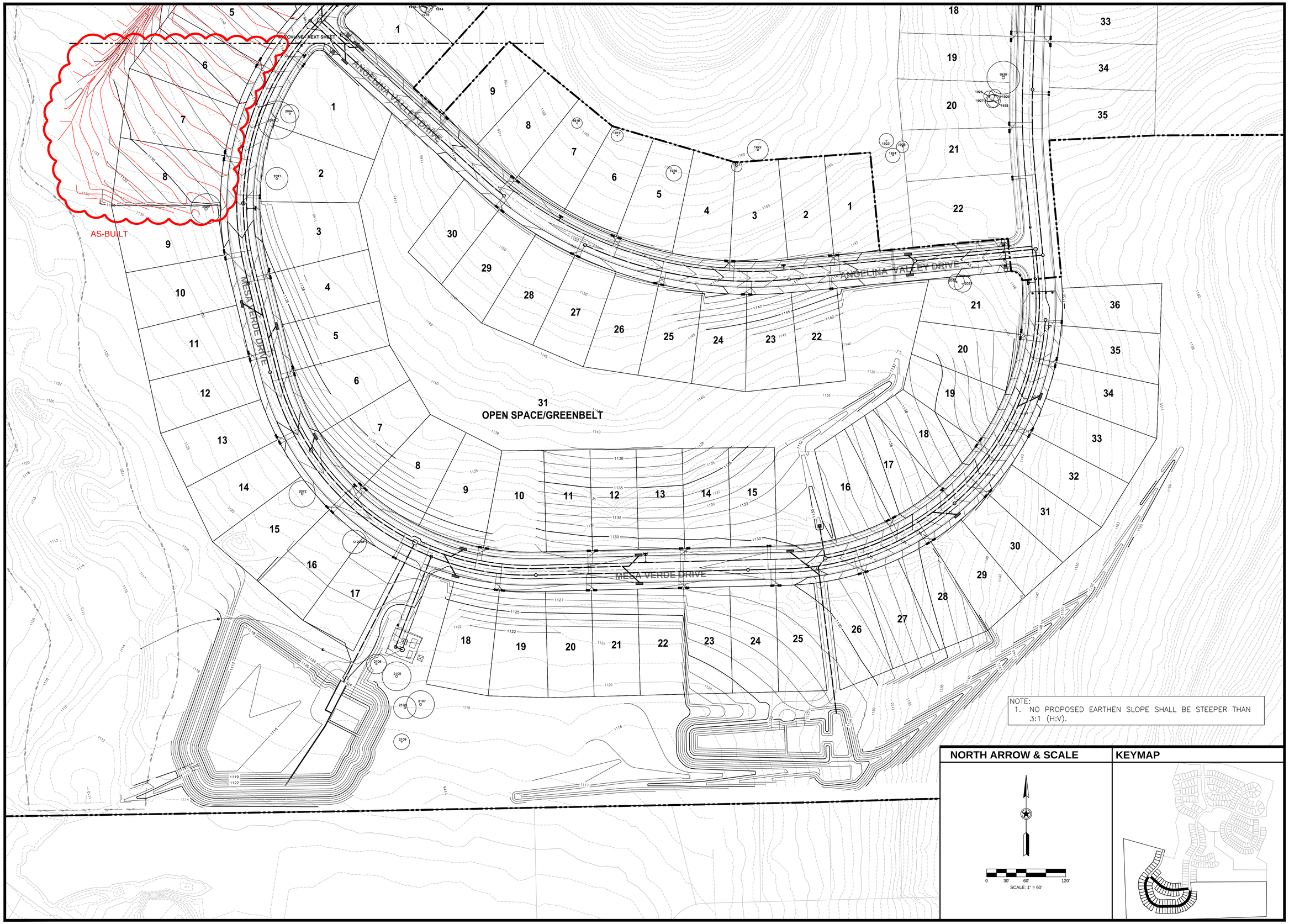

NOTE:
1. NO PROPOSED EARTHEN SLOPE SHALL BE STEEPER THAN 3:1 (H:V).

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

KEYMAP

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
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2/25/19

Texas Engineering Solutions

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F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
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SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: June 28, 2016
PLOTTED: February 25, 2019
PLOTTED BY: Carlos Martinez

BELTERRA SECTION 21-2

FINISH GRADING PLAN 1 OF 2

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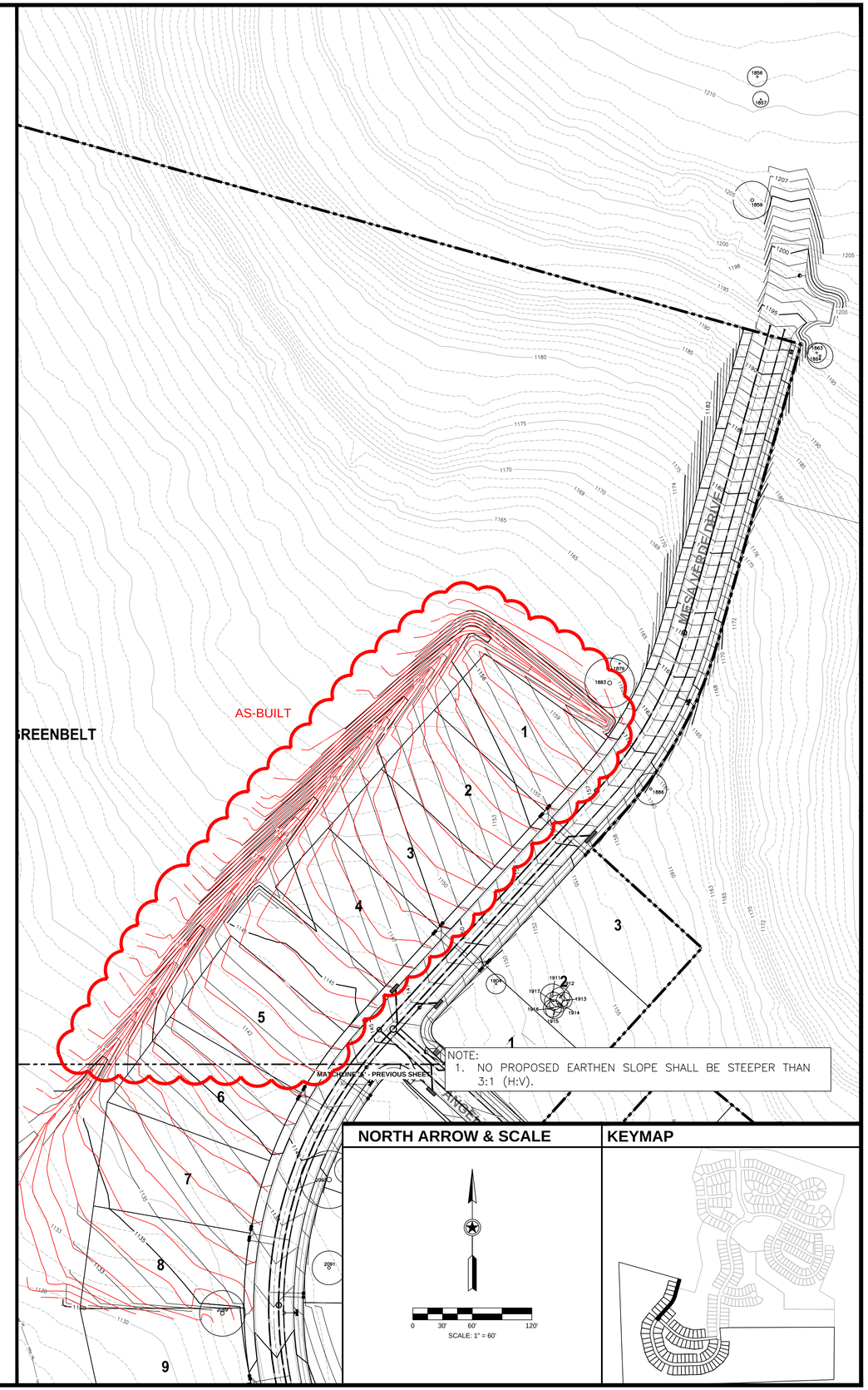

NOTE:
1. NO PROPOSED EARTHEN SLOPE SHALL BE STEEPER THAN 3:1 (H:V).

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

KEYMAP

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
2/25/19

Texas Engineering Solutions

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O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
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IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

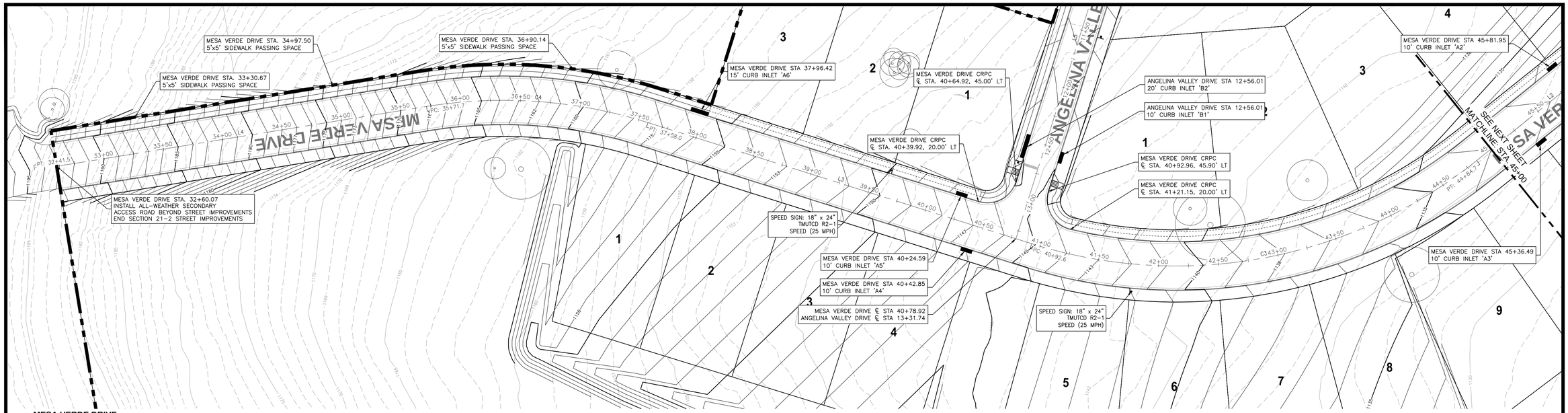
NO	DATE - DESCRIPTION

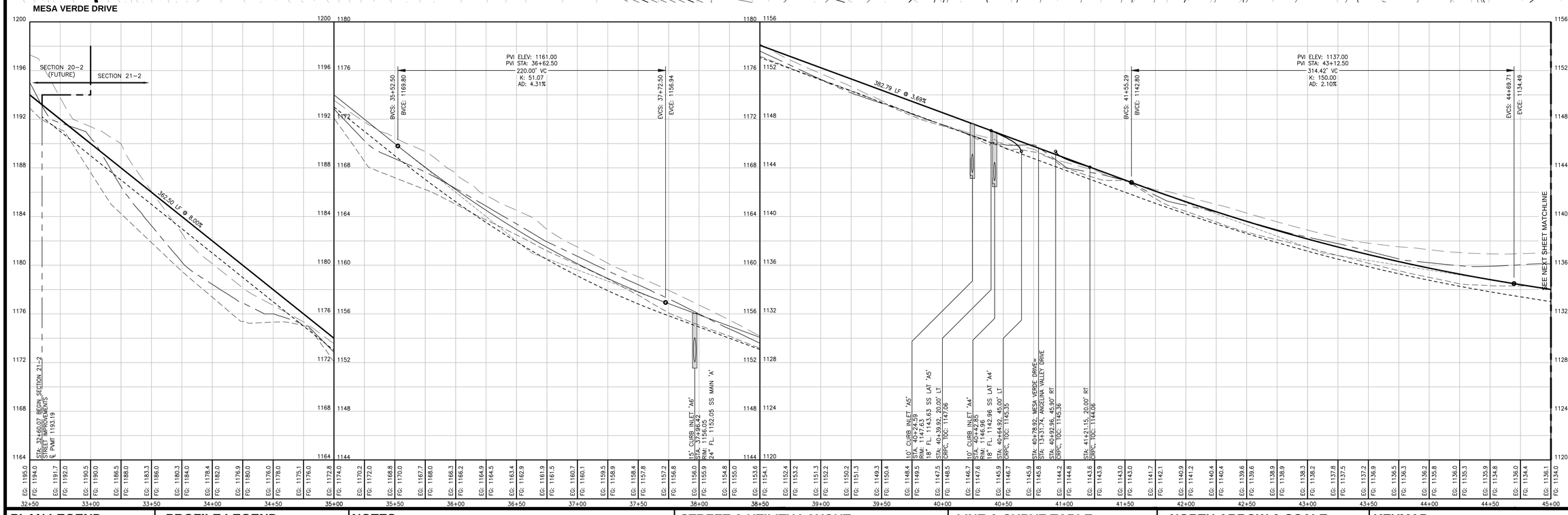
EDITED: June 28, 2016
PLOTTED: February 25, 2019
PLOTTED BY: Carlos Martinez

BELTERRA SECTION 21-2

FINISH GRADING PLAN 2 OF 2

T:\Private\Master\Crescent Belterra\Design\Ph 2 SEC 21\Grds Construction\S-PRESBELTRA_PH2_SEC21-GRD.dwg





PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK
- CURB AND GUTTER
- PROPOSED CONTOURS (755)
- EXISTING CONTOURS (750)
- VALLEY GUTTER DETAIL

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- EX GRADE AT RT ROW LINE
- EX GRADE AT LT ROW LINE
- PR TOP OF CURB
- PR BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE

SIGNAGE LEGEND

1. STOP SIGN (R1-1) AND STREET NAMES SIGN
2. SPEED LIMIT SIGN (R2-1) 25 MILES PER HOUR

STOP (R1-1) — SPEED LIMIT 25 (R2-1)

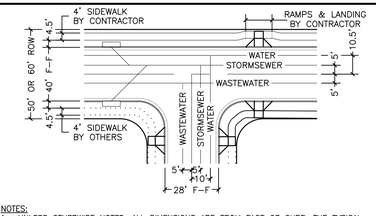
ALL STRIPING & SIGNAGE TO BE DONE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

SEE SHEET 63 FOR SIGN DETAIL

NOTES

1. WARNING: CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
3. CONTRACTOR SHALL REMOVE AND DISPOSE OF TREES 6" IN DIAMETER AND SMALLER ONLY WHEN NECESSARY. NO TREES LARGER THAN 6" IN DIAMETER OUTSIDE OF PAVED AREA SHALL BE REMOVED WITHOUT THE PERMISSION OF THE OWNER.
4. SIGNS AND DELINEATORS SHALL CONFORM TO TEXAS MANUAL ON UNIFORM TRAFFIC CONTROLS DEVICES (M.U.T.C.D.).
5. SIGNS AND OBJECT MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HAYS COUNTY ROAD DEPARTMENT.
6. SIDEWALKS ON LOCAL STREETS SHALL BE LOCATED 4' FROM BACK OF CURB. ALL SIDEWALKS ARE TO BE 4' WIDE (SEE DETAIL).
7. ALL SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF LICENSING AND REGULATIONS REQUIREMENTS.
8. PASSING SPACES TO BE PROVIDED ON SIDEWALKS AT A DISTANCE NOT TO EXCEED 200'. THE PASSING SPACE SHOULD BE A MINIMUM 5' WIDTH BY 5' LENGTH WITH NO MORE THAN A 2% CROSS SLOPE.
9. CONTRACTOR TO TAPER ALL CUT/FILL AT ROW AND REMOVE LOOSE MATERIALS TO LEAVE A CLEAN TRANSITION ADJACENT TO ROW. EXCEPTIONS TO THIS WOULD BE TO PRESERVE SIGNIFICANT HARDWOOD TREES. CONTRACTOR TO COORDINATE WITH OWNER.
10. SUBGRADE COMPACTION TO BE 95%. BASE COMPACTION TO BE 100%.
11. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED.
12. TRENCHES 5 FEET (1.5 METERS) DEEP OR GREATER REQUIRE A PROTECTIVE SYSTEM UNLESS THE EXCAVATION IS MADE ENTIRELY IN STABLE ROCK. IF LESS THAN 5 FEET DEEP, A COMPETENT PERSON MAY DETERMINE THAT A PROTECTIVE SYSTEM IS NOT REQUIRED.
13. TRENCHES 20 FEET (6.1 METERS) DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER OR BE BASED ON TABULATED DATA PREPARED AND/OR APPROVED BY A REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH 1926.652(B) AND (C).

STREET & UTILITY LAYOUT



NOTES:
1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF CURB. THE TYPICAL CURB RETURN RADIUS (FROM FACE OF CURB) IS 25'. ALL CURB RAMPS AS WELL AS SIDEWALKS SHOWN AS SOLID LINES ARE TO BE CONSTRUCTED BY CONTRACTOR WITH THIS CONTRACT. VALLEY GUTTERS SHALL BE INSTALLED ONLY WHERE CALLED FOR IN THESE PLANS.
2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LINE & CURVE TABLE

LINE TABLE

LINE #	LENGTH	DIRECTION
L1	379.72	S88° 33' 34.56"W
L2	162.94	N13° 50' 06.15"W
L3	334.59	N42° 19' 48.27"E
L4	311.59	N15° 37' 52.40"E
L5	348.89	N47° 40' 11.73"W
L6	330.62	S84° 30' 49.63"W

CURVE TABLE

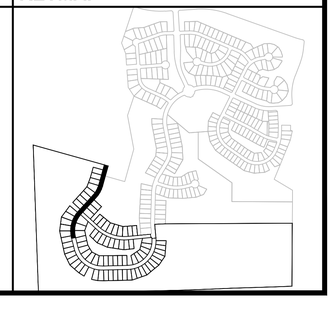
CURVE #	LENGTH	RADIUS	DELTA
C1	634.56	400.00	090.89
C2	541.79	400.00	077.61
C3	392.11	400.00	056.17
C4	186.39	400.00	026.70
C5	500.73	600.00	047.82

NORTH ARROW & SCALE

0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

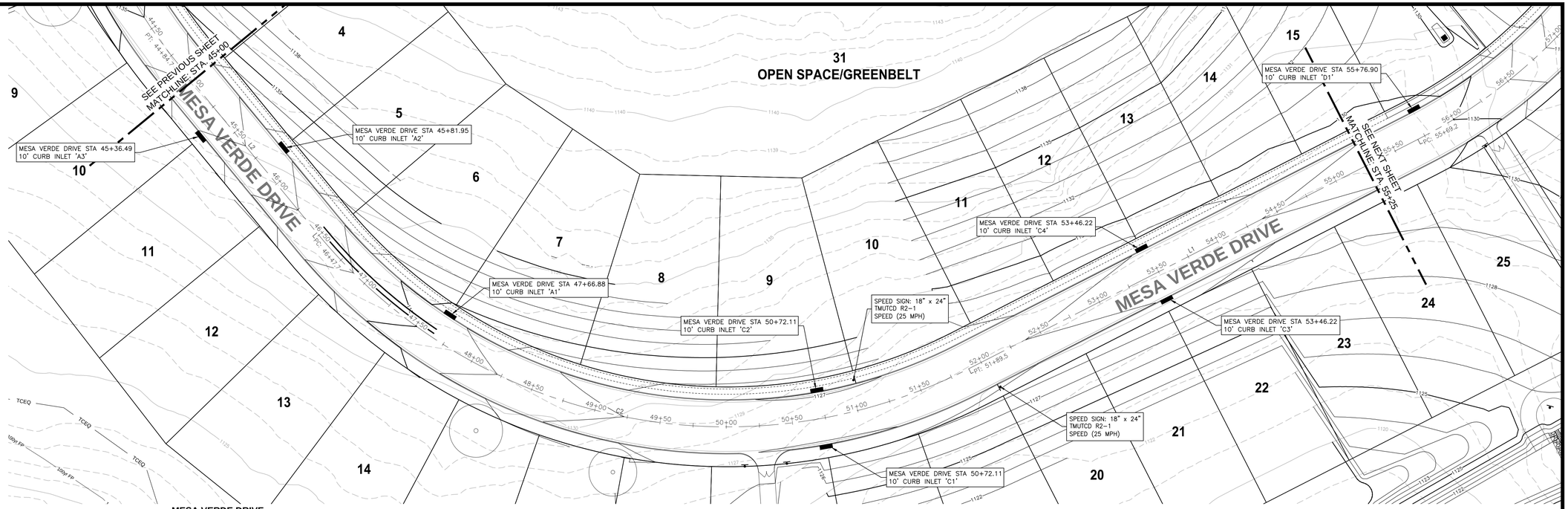
NO	DATE - DESCRIPTION

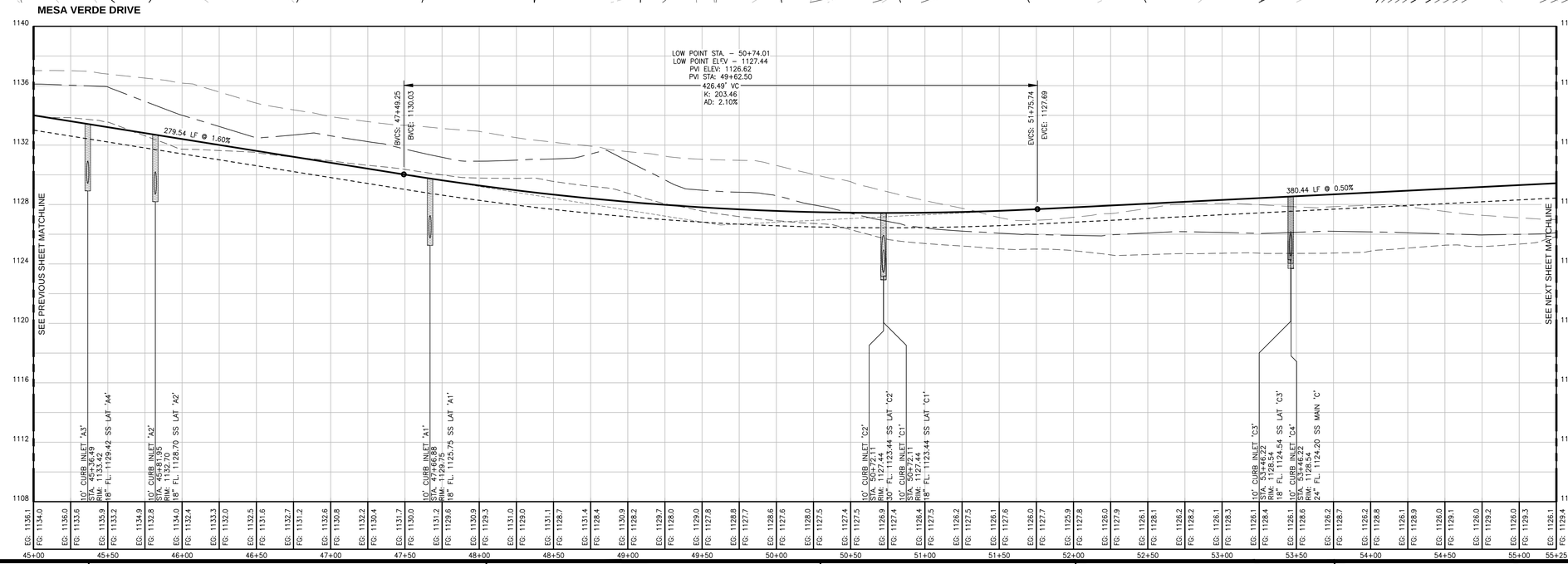
EDITED: August 4, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: MESA VERDE DRIVE STA. 34+18-45+50

T:\Private\Mosaic\Crescent Belterra\Design\Ph 2 SEC 21\Site Construction\S-CAESBELDR_PH2_SEC21-SIH-MESA.dwg





PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK
- CURB AND GUTTER
- 735 PROPOSED CONTOURS
- 750 EXISTING CONTOURS
- VALLEY GUTTER DETAIL

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- EX GRADE AT RT ROW LINE
- EX GRADE AT LT ROW LINE
- PR TOP OF CURB
- PR BASE GRADE BELOW CROWN
- EG: 686.3 EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 FINISHED GRADE ELEVATION AT STREET CENTER LINE

SIGNAGE LEGEND

1. STOP SIGN (R1–1) AND STREET NAMES SIGN
2. SPEED LIMIT SIGN (R2–1) 25 MILES PER HOUR

ALL STRIPING & SIGNAGE TO BE DONE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

SEE SHEET 63 FOR SIGN DETAIL

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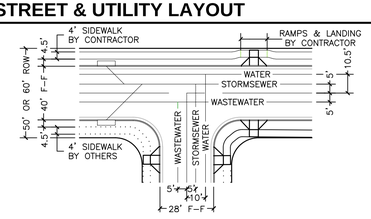
STREET & UTILITY LAYOUT



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LINE & CURVE TABLE

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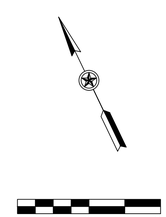
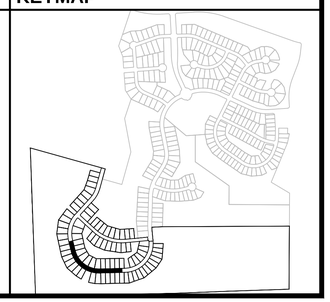
NORTH ARROW & SCALE



HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

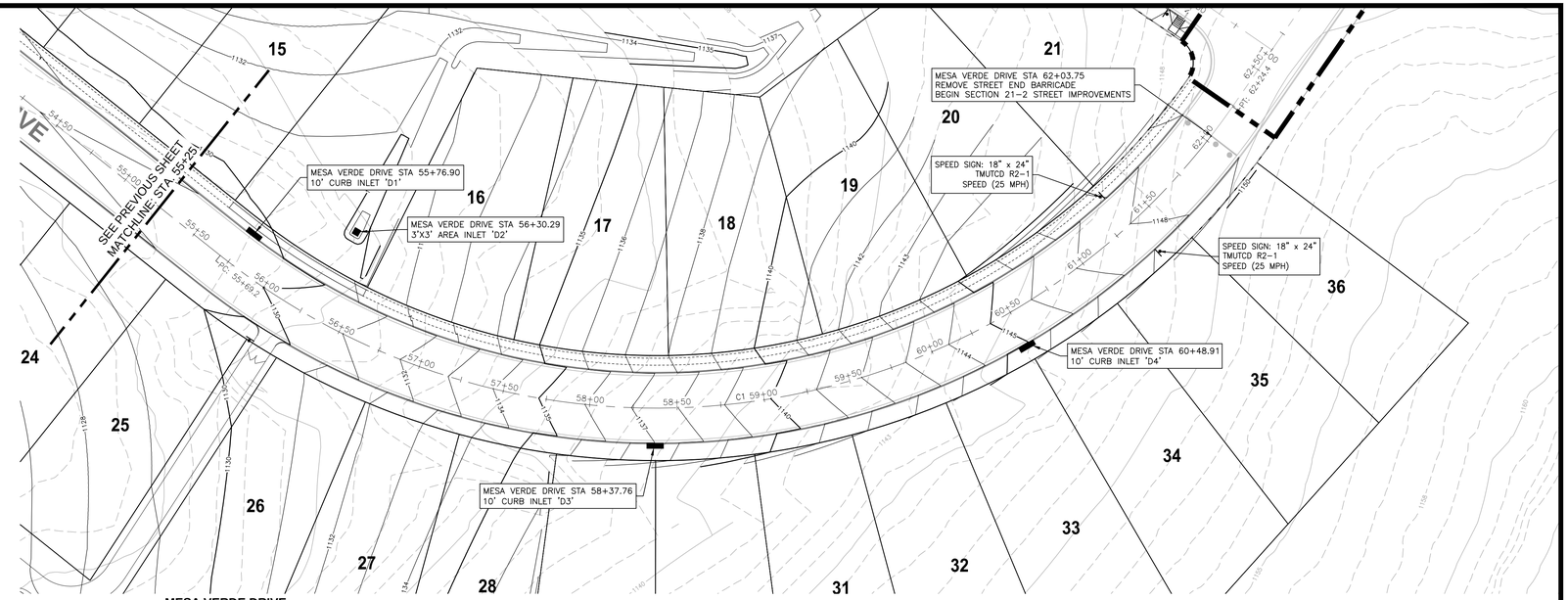
NO	DATE - DESCRIPTION

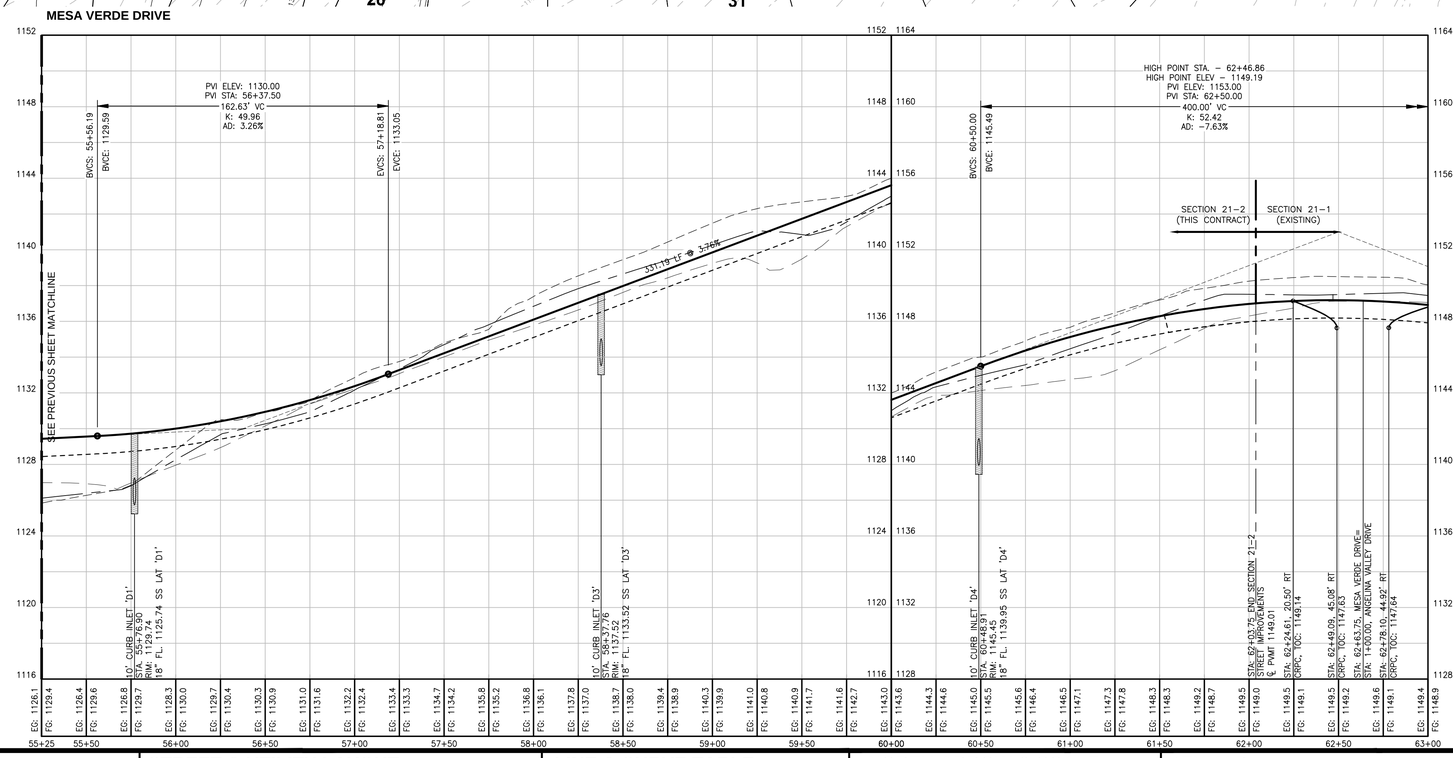
EDITED: August 4, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: MESA VERDE DRIVE STA. 45+50-55+25

T:\Private\Maxus\Crescent Belterra\Design\PH 2 SEC 21\Sits Construction\S-CRESBELTRA_PH2_SEC21-STP-MESA.dwg





PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK
- CURB AND GUTTER
- PROPOSED CONTOURS (755, 750)
- EXISTING CONTOURS
- VALLEY GUTTER DETAIL

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- EX GRADE AT RT ROW LINE
- EX GRADE AT LT ROW LINE
- PR TOP OF CURB
- PR BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE

SIGNAGE LEGEND

1. STOP SIGN (R1-1) AND STREET NAMES SIGN
2. SPEED LIMIT SIGN (R2-1) 25 MILES PER HOUR

STOP (R1-1) — SPEED LIMIT 25 (R2-1)

ALL STRIPING & SIGNAGE TO BE DONE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

SEE SHEET 63 FOR SIGN DETAIL

NOTES

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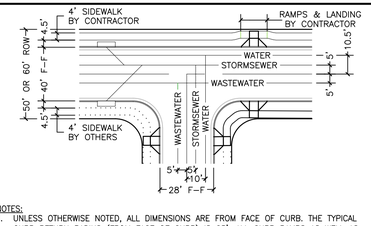
STREET & UTILITY LAYOUT



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NORTH ARROW & SCALE

0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
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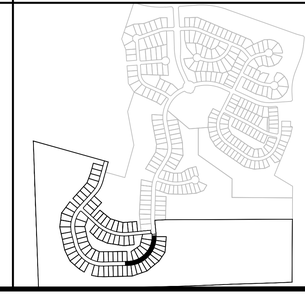
KEYMAP



STATE OF TEXAS
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8/22/17

Texas Engineering Solutions

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Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
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469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 4, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: MESA VERDE DRIVE STA. 55+25-62+04

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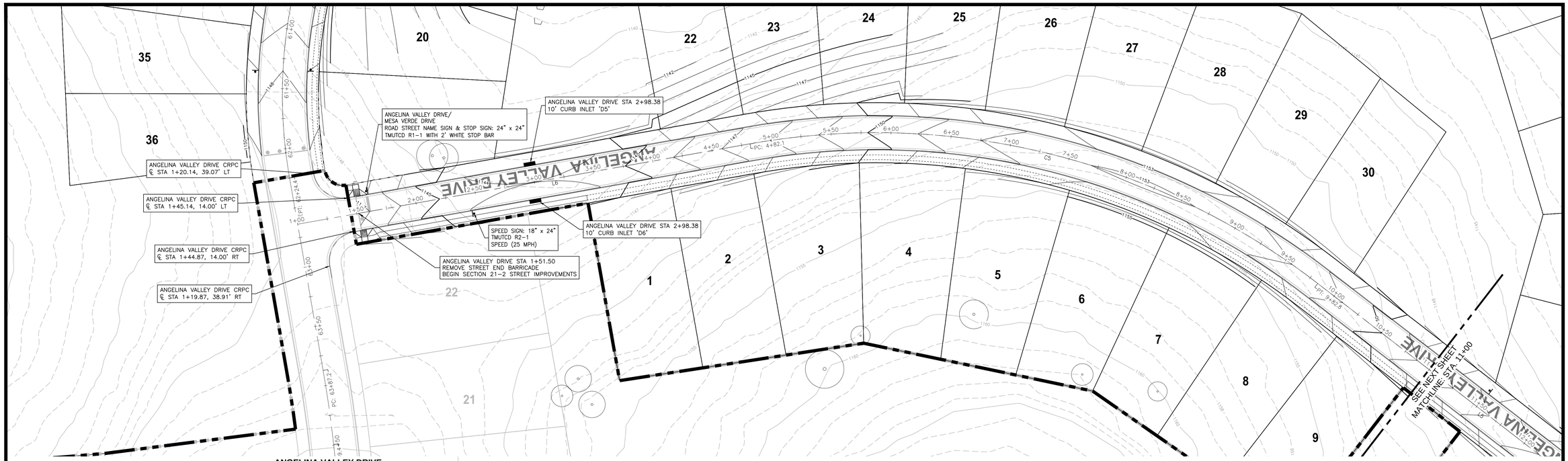

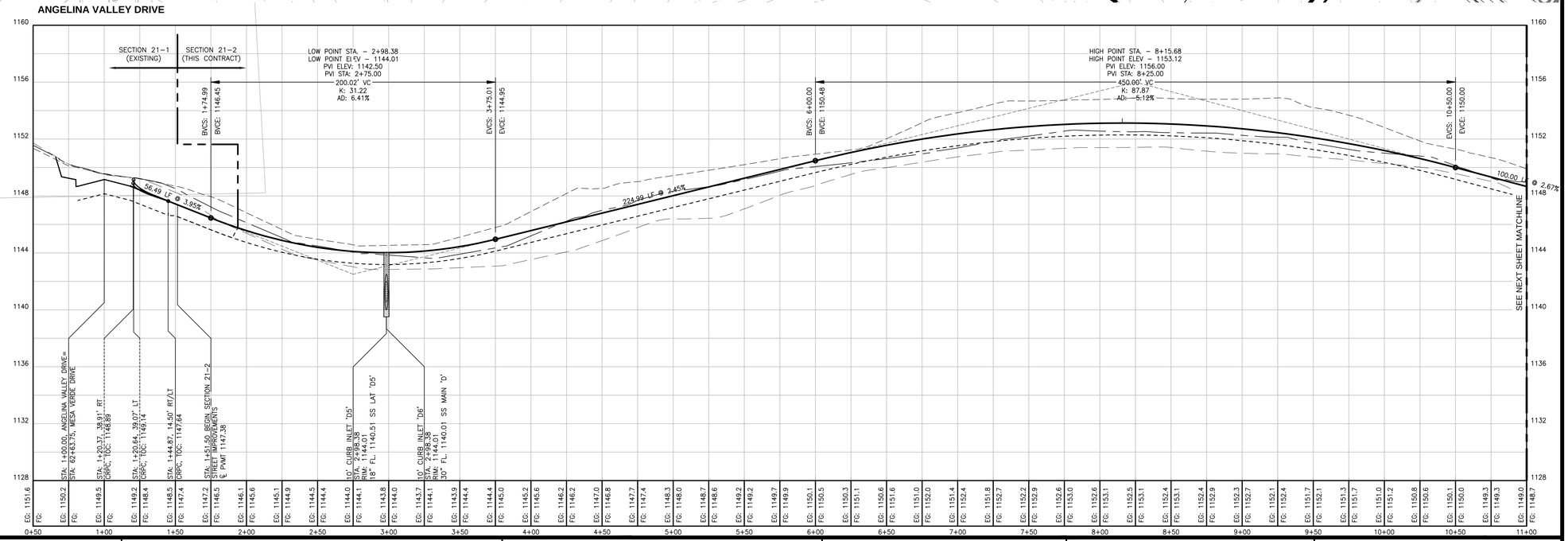

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- STREET CENTERLINE
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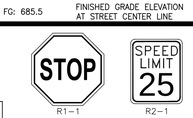

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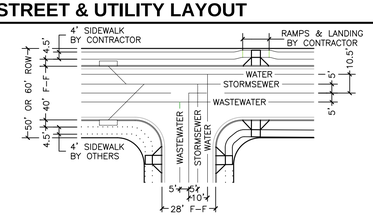
STREET & UTILITY LAYOUT



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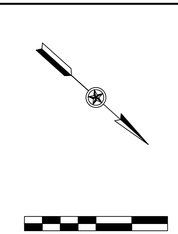

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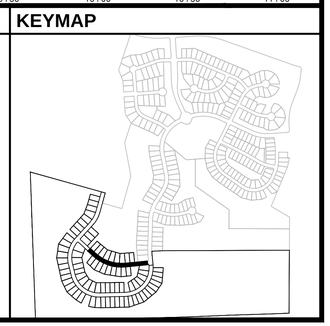

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COUNTY:	HAYS
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AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

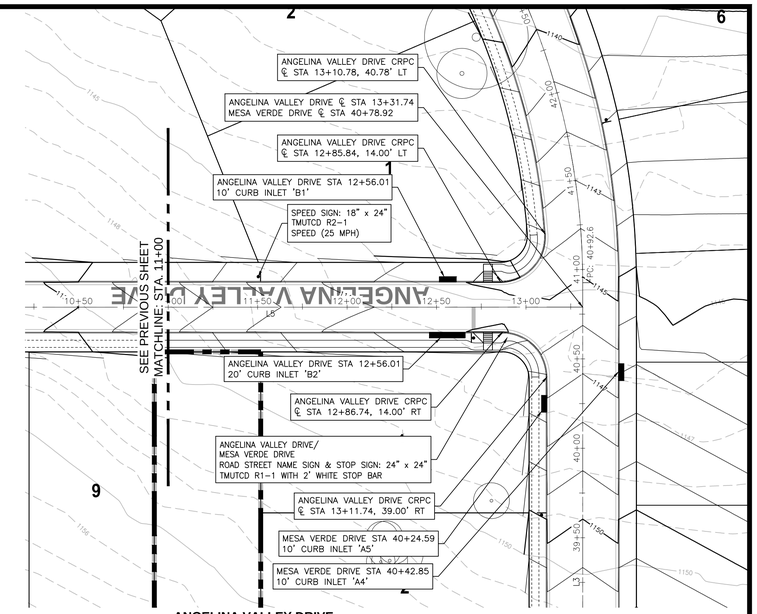
NO	DATE - DESCRIPTION

EDITED: August 4, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

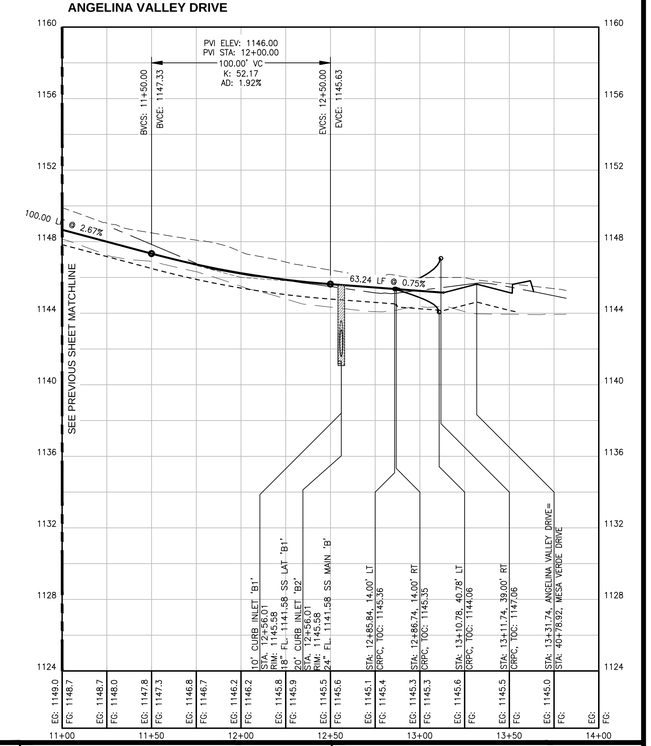
BELTERRA SECTION 21-2

PLAN & PROFILE: ANGELINA VALLEY DRIVE STA. 1+51-11+00

T:\Private\Mesa\Crescent Belterra\Design\Ph 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-SIP-ANGELINA.dwg



ANGELINA VALLEY DRIVE



PLAN LEGEND

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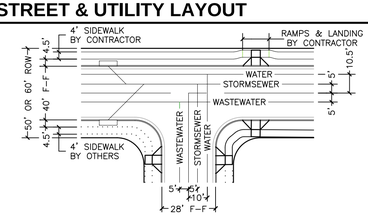

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LINE & CURVE TABLE

LINE TABLE

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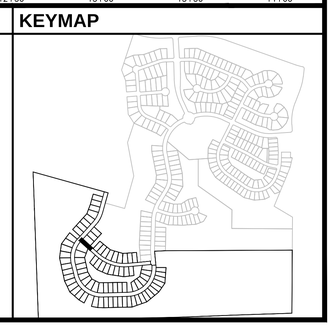
NORTH ARROW & SCALE

0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS — STEPHEN R. DELGADO — 99342 — LICENSED PROFESSIONAL ENGINEER — 8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

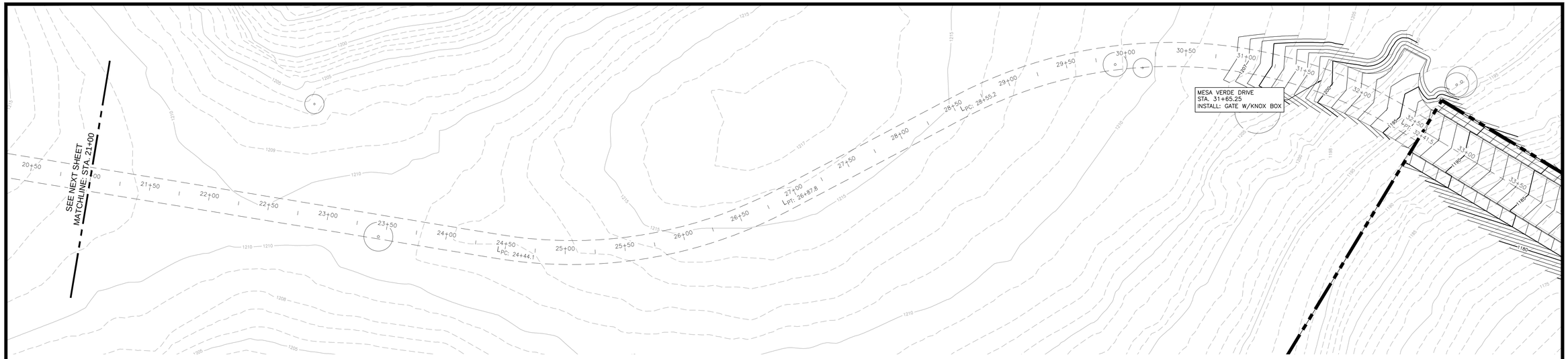
NO	DATE - DESCRIPTION

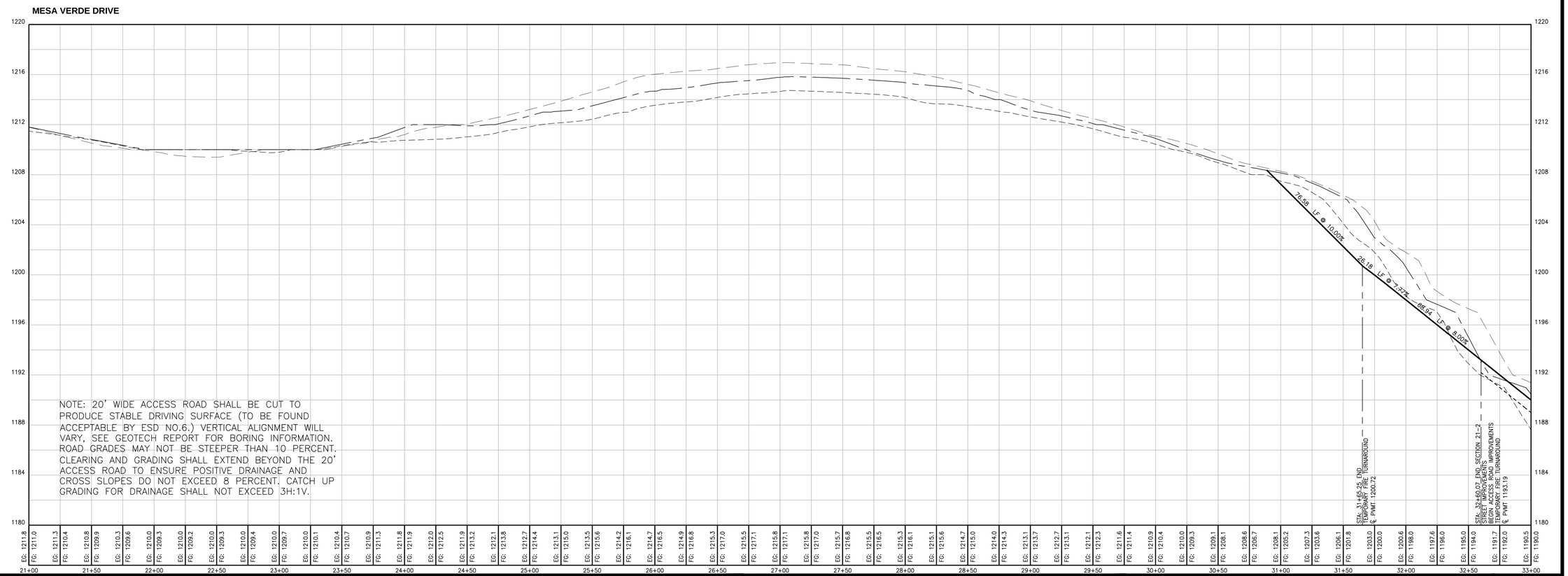
EDITED: August 4, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: ANGELINA VALLEY DRIVE STA. 11+00-13+32

T:\Private\Mission Crescent - Belterra\Design\PH 2 SEC 21\Plans Construction\S-CRESSELENA_PH2_SEC21-SIP-ANGELINA.dwg





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- RIGHT OF WAY
- STREET CENTERLINE
- SIDEWALK
- CURB AND GUTTER
- 755 PROPOSED CONTOURS
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2. SPEED LIMIT SIGN (R2-1) 25 MILES PER HOUR

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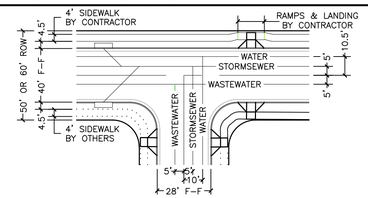

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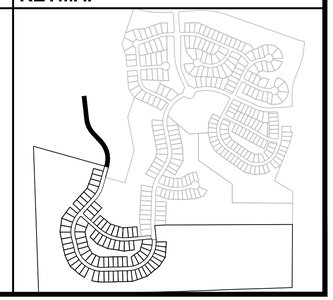

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Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
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FEMA MAP PANEL: 48209C0140F

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469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 29, 2016
PLOTTED: September 21, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: ACCESS ROAD STA. 21+00-32+60

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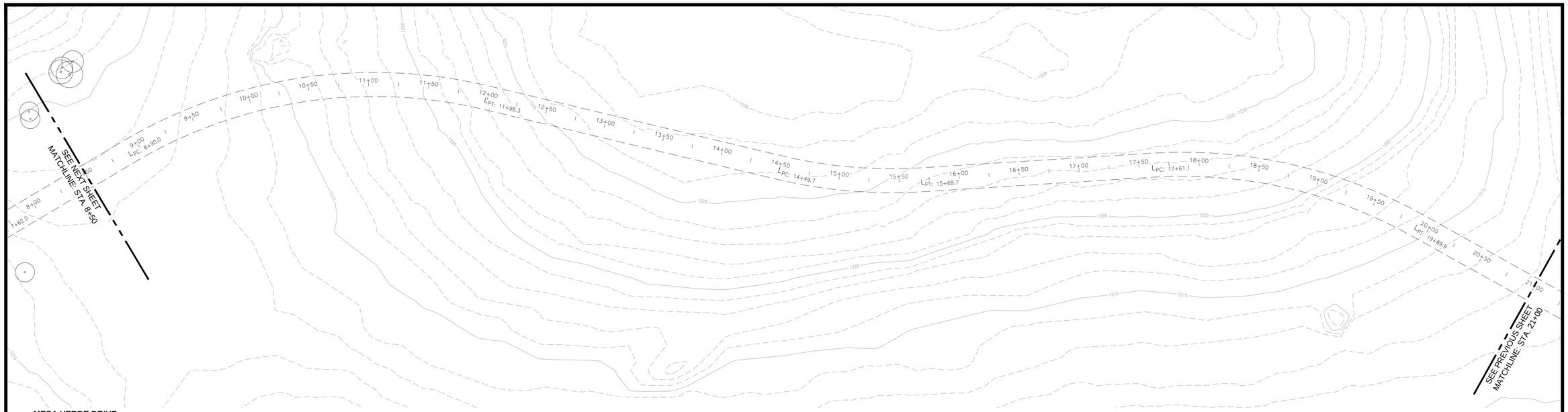

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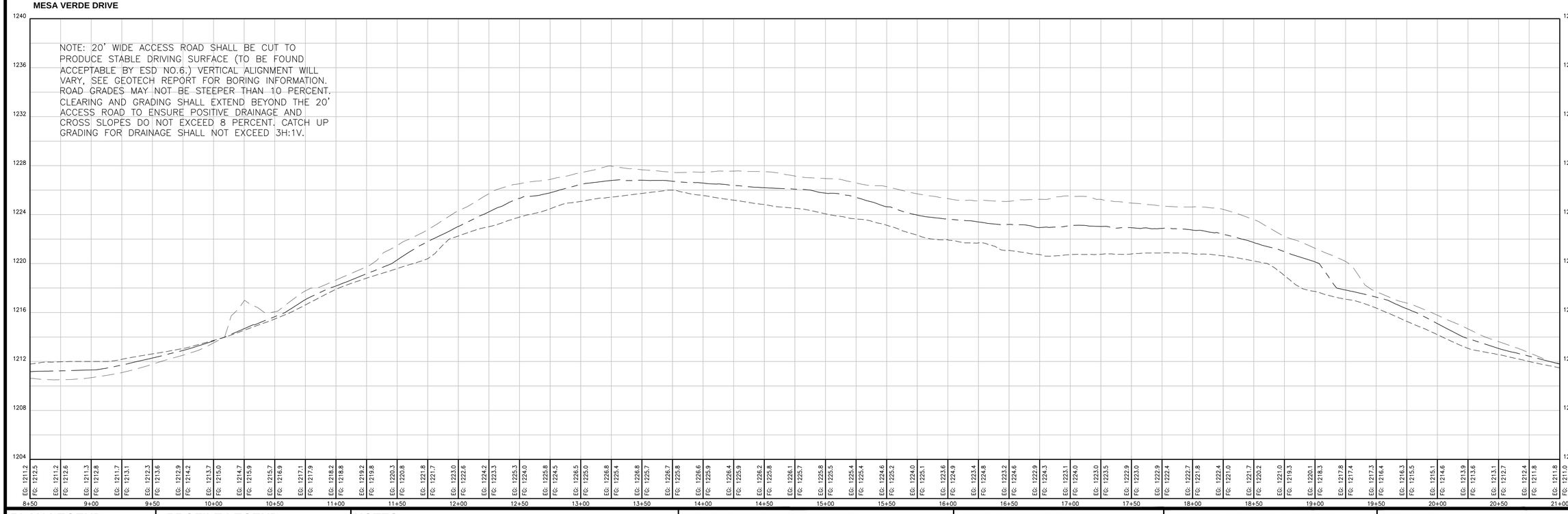

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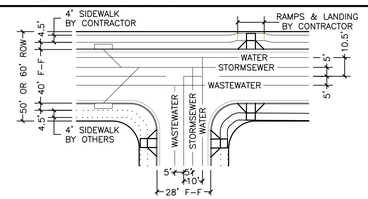

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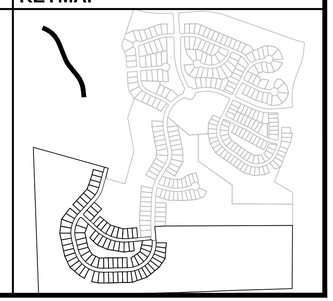

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REVISIONS

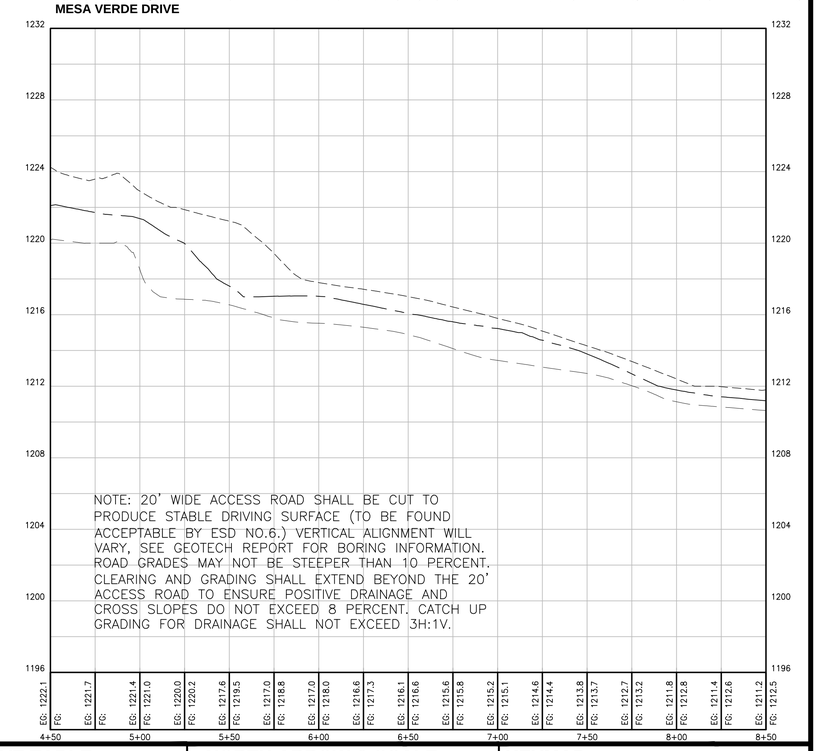
NO	DATE - DESCRIPTION

EDITED: August 29, 2016
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: ACCESS ROAD STA. 8+50-21+00

T:\Private\Oakcrest Belterra\Design\Ph 2 SEC 21\Sht Construction\5-CAESEC1PA6_PH2_SEC21-STP-ACCESS.dwg



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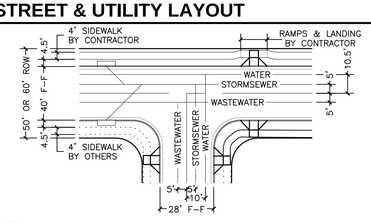

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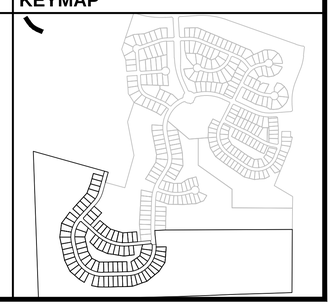
0 20' 40' 80'

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

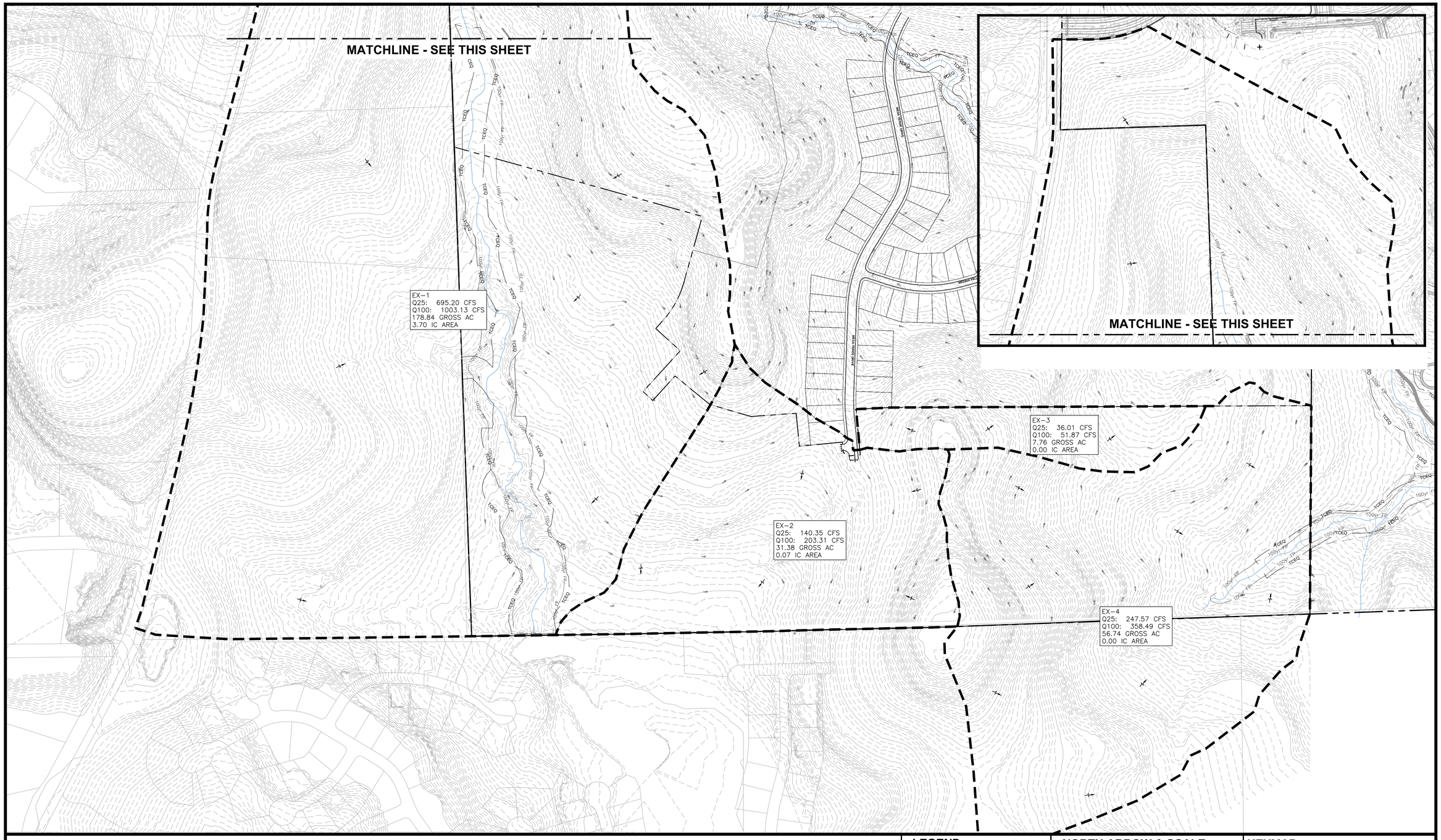
NO	DATE - DESCRIPTION

EDITED: August 29, 2016
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: ACCESS ROAD STA. 5+01-8+50

T:\Private\Mesa\Crescent Belterra\Design\PH 2 SEC 21\Shts Construction\CS-CBESBELPH2_PM2_SEC21-STP-ACCESS.dwg



LEGEND

750	EXISTING CONTOURS
	DRAINAGE AREA BOUNDARY
	STORM SEWER LINE
	FLOW ARROW
	DRAINAGE SWALE
XX XXXX Ac.	DRAINAGE AREA DESIGNATION AND ACREAGE DRAINED
100yr FP	100yr FLOODPLAIN
TCEQ	TCEQ BUFFER ZONE

NORTH ARROW & SCALE

0 100' 200' 400'

SCALE: 1" = 200'

KEYMAP

STATE OF TEXAS
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8/22/17

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O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
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IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

DRAINAGE AREA MAP: EXISTING CONDITIONS

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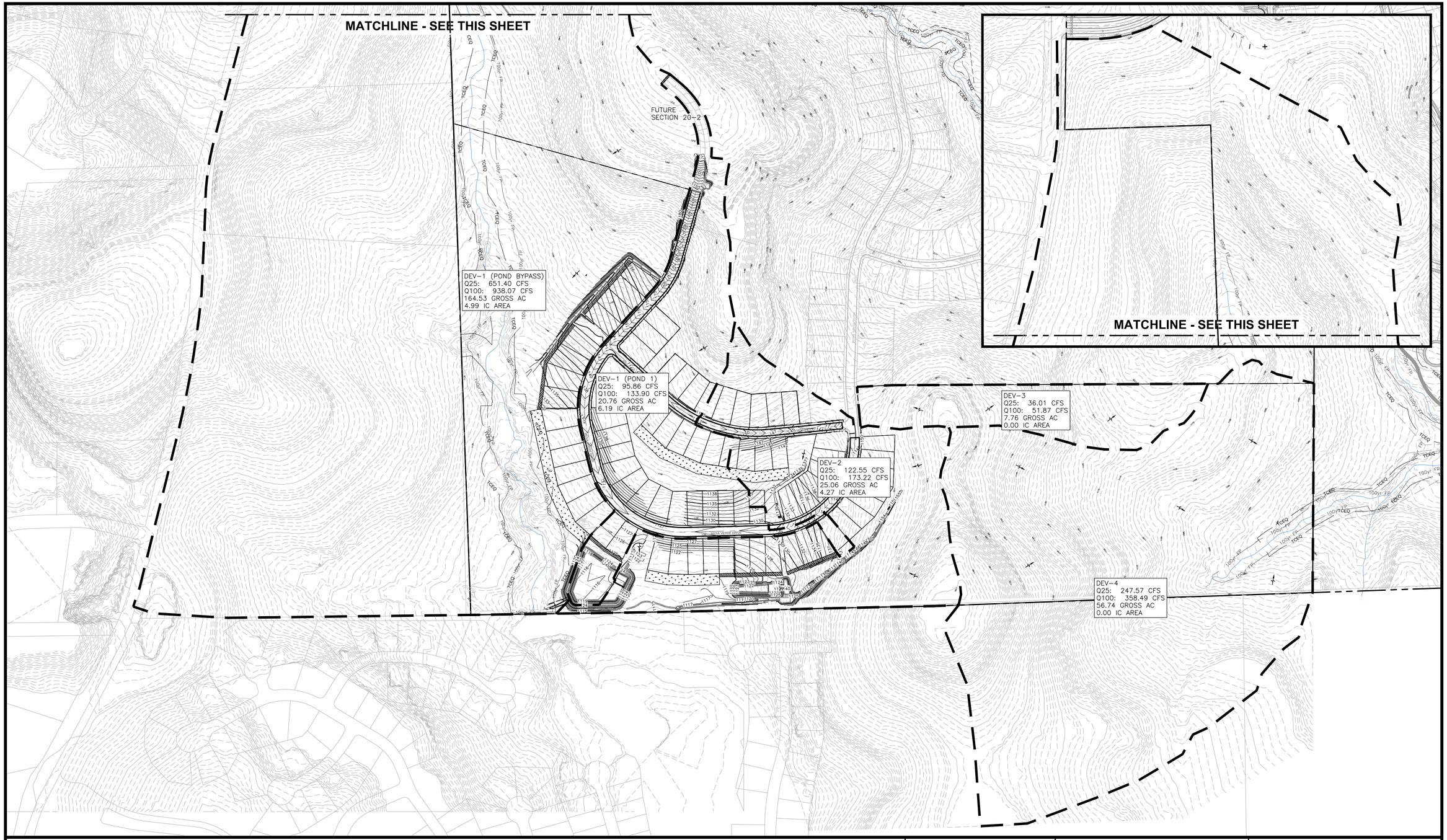


LEGEND

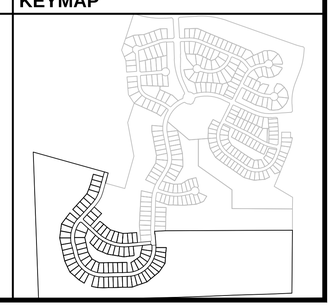
- EXISTING CONTOURS
- DRAINAGE AREA BOUNDARY
- STORM SEWER LINE
- FLOW ARROW
- DRAINAGE SWALE
- XX / Q25: XX.XX CFS / Q100: XX.XX CFS / XX.XX GROSS Ac. / XX.XX IC Ac. — DRAINAGE AREA DESIGNATION AND ACREAGE DRAINED
- 100yr FP — 100yr FLOODPLAIN
- TCEQ — TCEQ BUFFER ZONE
- ENG. VFS
- NAT. VFS

NORTH ARROW & SCALE

0 100' 200' 400'

SCALE: 1" = 200'

KEYMAP



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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

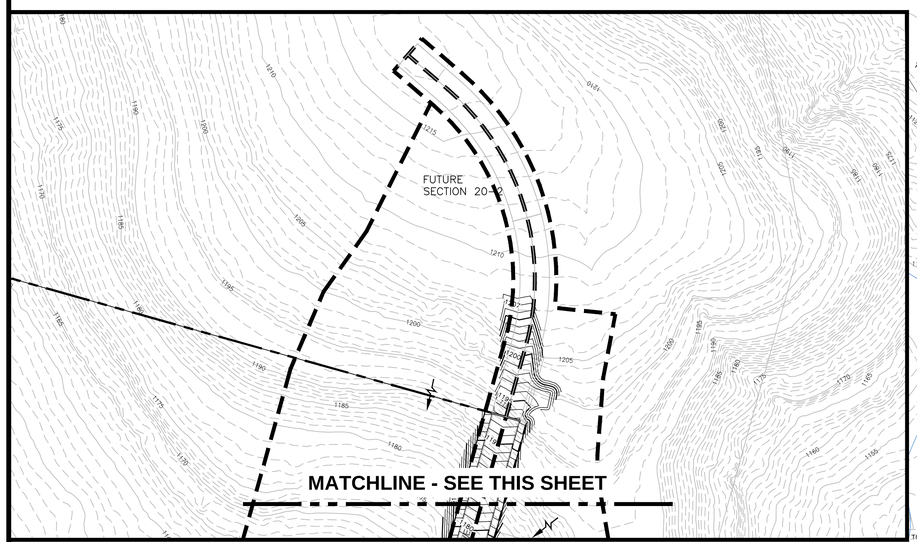
NO	DATE - DESCRIPTION

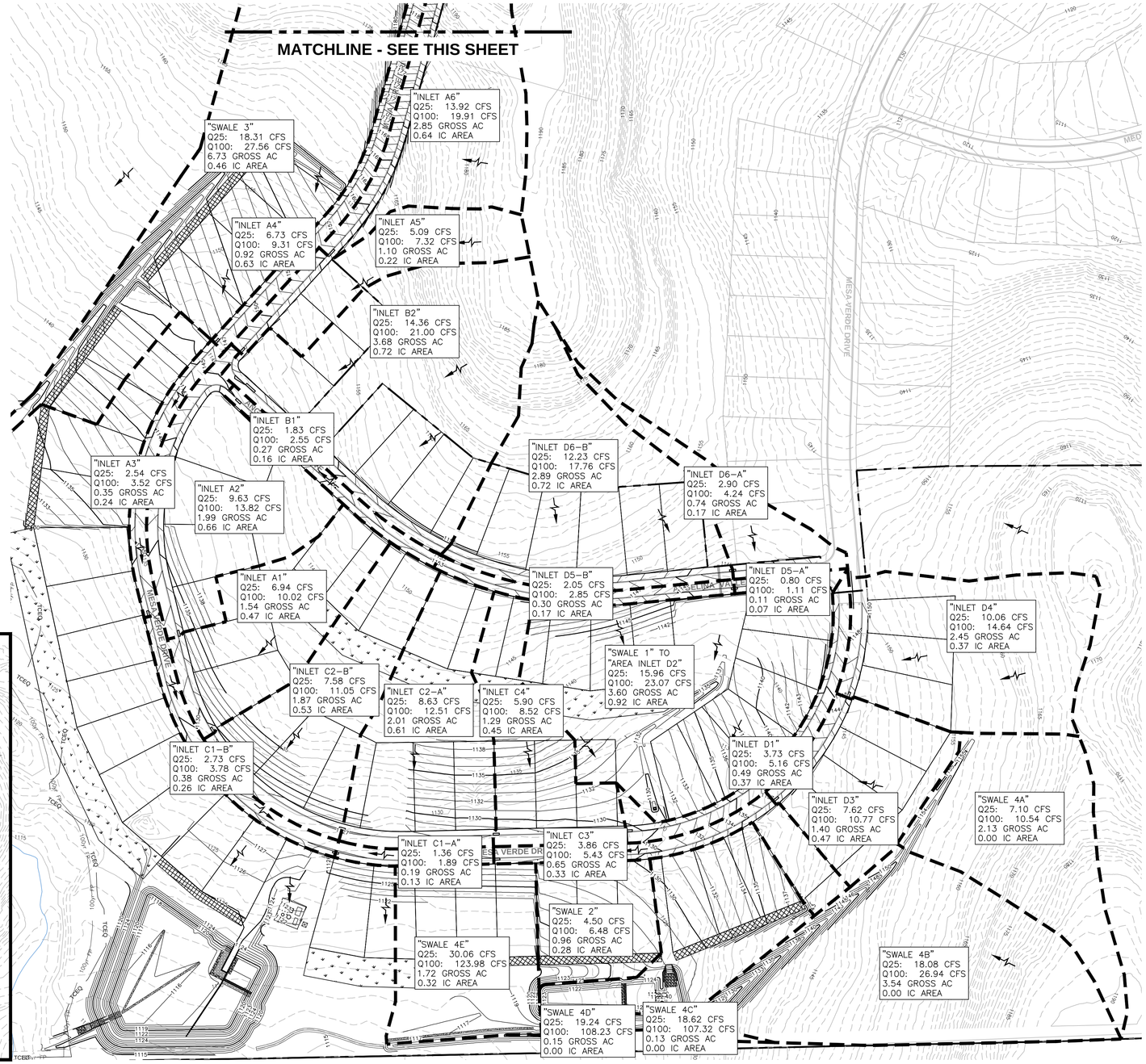
EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

DRAINAGE AREA MAP: DEVELOPED CONDITIONS

T:\Private\Mesa\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-DRESBELTRA-PH2_SEC21-DAM.dwg





NOTES

VEGETATIVE FILTER STRIP (VFS) NOTES PER TCEQ RG-348:

1. NATURAL VFS SLOPE SHALL NOT EXCEED 10%, OTHERWISE ENGINEERED VFS IS REQUIRED.
2. NATURAL VFS SHALL BE A MINIMUM DIMENSION OF 50 FEET IN THE DIRECTION OF FLOW.
3. NATURAL VFS REQUIRES NO SPECIFIC VEGETATION DENSITY AND TYPE.
4. ENGINEERED VFS SHALL NOT EXCEED 20%.
5. ENGINEERED VFS SHALL BE A MINIMUM DIMENSION OF 15 FEET IN THE DIRECTION OF FLOW.
6. ENGINEERED VFS SHALL HAVE A MINIMUM VEGETATED COVER OF 80%.
7. ENGINEERED VFS SHALL BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW.
8. ENGINEERED VFS SHALL BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.

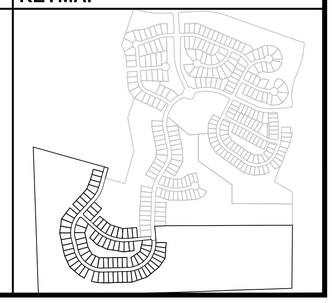
LEGEND

- 750 — EXISTING CONTOURS
- DRAINAGE AREA BOUNDARY
- STORM SEWER LINE
- FLOW ARROW
- DRAINAGE SWALE
- XX / Q25: XX.XX CFS / Q100: XX.XX CFS / XX.XX GROSS Ac. / XX.XX IC Ac. — DRAINAGE AREA DESIGNATION AND ACREAGE DRAINED
- 100yr FP — 100yr FLOODPLAIN
- TCEQ — TCEQ BUFFER ZONE
- ENG. VFS
- NAT. VFS

NORTH ARROW & SCALE

0 50' 100' 200'
SCALE: 1" = 100'

KEYMAP



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Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

DRAINAGE AREA MAP: STORM SEWER SYSTEM PLAN

T:\Private\Mekan\Crescent Beltterra\Design\Ph 2 SEC 21\Site Construction\S-DRESBELTRA-PH2_SEC21-DRAN.dwg

Drainage Calculations

BASIN			Area (AC)	Composite "C"				Sheet Flow					Shallow Concentrated Flow Pervious					Shallow Concentrated Flow Pavement					Concentrated (Channelized) Flow							Cumulative TC (min)	Intensity				Design Discharge Q (cfs)			
Basin Area	To Inlet	%IC		2-YR	10-YR	25-YR	100-YR	Length	n	▲z	Slope (%)	TC (min)	Length	n	▲z	Slope (%)	TC (min)	Length	n	▲z	Slope (%)	TC (min)	Length	R (assumed)	n	▲z	Slope (%)	Velocity	TC (min)		2-Year	10-Year	25-Year	100-Year	2-Year	10-Year	25-Year	100-Year
A1	A1	30.5%	1.538	0.45	0.51	0.55	0.63	100	0.300	5.0	5.00%	3.194	288	0.300	14.0	4.86%	6.531	165	0.020	2.5	1.52%	0.447		0.509	0.045		0.00%	0.000	0.000	10.17	4.59	6.85	8.14	10.34	3.19	5.39	6.94	10.02
A2	A2	33.0%	1.989	0.46	0.52	0.57	0.64	100	0.300	6.0	6.00%	2.916	220	0.300	9.0	4.09%	5.439	188	0.020	3.5	1.86%	0.459		0.509	0.045		0.00%	0.000	0.000	8.81	4.84	7.22	8.57	10.83	4.45	7.50	9.63	13.82
A3	A3	67.7%	0.350	0.60	0.67	0.72	0.80	40	0.020	1.8	4.38%	0.091	0	0.300	0.0	0.00%	0.000	468	0.020	12.0	2.56%	0.974		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	1.21	2.01	2.54	3.52
A4	A4	68.7%	0.921	0.60	0.68	0.72	0.81	40	0.020	0.8	2.00%	0.135	0	0.300	0.0	0.00%	0.000	1295	0.020	69.0	5.33%	1.870		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	3.21	5.33	6.73	9.31
A5	A5	19.8%	1.103	0.41	0.47	0.51	0.58	100	0.300	6.0	6.00%	2.916	262	0.300	27.0	10.31%	4.081	208	0.020	8.0	3.85%	0.354		0.509	0.045		0.00%	0.000	0.000	7.35	5.15	7.68	9.09	11.42	2.33	3.94	5.09	7.32
A6	A6	22.4%	2.849	0.42	0.48	0.52	0.59	100	0.300	5.0	5.00%	3.194	172	0.300	17.0	9.88%	2.736	480	0.020	30.0	6.52%	0.600		0.509	0.045		0.00%	0.000	0.000	6.53	5.35	7.96	9.42	11.78	6.39	10.81	13.92	19.91
B1	B1	57.7%	0.269	0.56	0.63	0.67	0.76	100	0.020	1.0	1.00%	0.476	0	0.300	0.0	0.00%	0.000	357	0.020	8.5	1.82%	0.882		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	0.87	1.45	1.83	2.55
B2	B2	18.8%	3.684	0.41	0.46	0.50	0.58	100	0.300	2.0	2.00%	5.051	400	0.300	39.0	9.75%	6.405	110	0.020	2.0	1.82%	0.272		0.509	0.045		0.00%	0.000	0.000	11.73	4.33	6.48	7.71	9.83	6.47	11.00	14.28	20.89
C1-A	C1	68.0%	0.188	0.60	0.67	0.72	0.80	21	0.020	0.5	2.40%	0.064	0	0.300	0.0	0.00%	0.000	265	0.020	1.0	0.38%	1.438		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	0.65	1.08	1.36	1.89
C1-B		67.7%	0.376	0.60	0.67	0.72	0.80	43	0.020	0.8	1.73%	0.157	0	0.300	0.0	0.00%	0.000	508	0.020	5.0	0.98%	1.707		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	1.20	2.16	2.73	3.78
C2-A	C2	30.2%	2.014	0.45	0.51	0.55	0.63	100	0.300	4.0	4.00%	3.571	357	0.300	20.0	5.60%	7.541	115	0.020	0.8	0.65%	0.475		0.509	0.045		0.00%	0.000	0.000	11.59	4.35	6.51	7.74	9.88	3.95	6.68	8.63	12.51
C2-B		28.3%	1.873	0.44	0.50	0.54	0.62	100	0.300	4.0	4.00%	3.571	370	0.300	19.0	5.14%	8.164	275	0.020	2.0	0.73%	1.075		0.509	0.045		0.00%	0.000	0.000	12.81	4.17	6.24	7.43	9.52	3.46	5.86	7.58	11.05
C3	C3	51.6%	0.633	0.54	0.60	0.65	0.73	100	0.300	6.0	6.00%	2.916	96	0.300	4.0	4.17%	2.352	471	0.020	7.6	1.60%	1.240		0.509	0.045		0.00%	0.000	0.000	6.51	5.35	7.97	9.43	11.80	1.82	3.04	3.86	5.43
C4	C4	34.9%	1.290	0.47	0.53	0.57	0.65	100	0.300	5.0	5.00%	3.194	333	0.300	17.0	5.11%	7.369	65	0.020	1.0	1.54%	0.175		0.509	0.045		0.00%	0.000	0.000	10.74	4.49	6.71	7.98	10.15	2.72	4.59	5.90	8.52
D1	D1	74.5%	0.494	0.63	0.70	0.75	0.83	36	0.020	0.5	1.39%	0.145	0	0.300	0.0	0.00%	0.000	710	0.020	21.0	2.60%	1.468		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	1.79	2.96	3.73	5.16
D2	SWALE 1 to D2	25.5%	3.598	0.43	0.49	0.53	0.61	100	0.300	7.0	7.00%	2.700	290	0.300	14.0	4.83%	6.599	0	0.020	0.0	0.00%	0.000	44	0.509	0.045	0.9	2.00%	2.985	0.246	9.54	4.70	7.02	8.33	10.56	7.31	12.36	15.96	23.07
D3	D3	34.5%	1.360	0.47	0.53	0.57	0.65	100	0.300	6.0	6.00%	2.916	112	0.300	6.0	5.36%	2.419	178	0.020	6.0	3.37%	0.323		0.509	0.045		0.00%	0.000	0.000	5.66	5.57	8.30	9.80	12.20	3.55	5.96	7.62	10.77
D4	D4	15.2%	2.452	0.39	0.45	0.49	0.56	100	0.300	7.0	7.00%	2.700	310	0.300	19.0	6.13%	6.281	143	0.020	4.0	2.80%	0.285		0.509	0.045		0.00%	0.000	0.000	9.25	4.76	7.10	8.43	10.67	4.56	7.75	10.06	14.64
D5-A	D5	65.5%	0.112	0.59	0.66	0.71	0.79	50	0.020	2.0	4.04%	0.117	0	0.300	0.0	0.00%	0.000	148	0.020	3.5	2.37%	0.320		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	0.38	0.63	0.80	1.11
D5-B		57.6%	0.301	0.56	0.63	0.67	0.76	100	0.020	1.0	1.00%	0.476	0	0.300	0.0	0.00%	0.000	423	0.020	8.5	2.01%	0.993		0.509	0.045		0.00%	0.000	0.000	5.00	5.76	8.57	10.11	12.54	0.97	1.62	2.05	2.85
D6-A	D6	22.3%	0.742	0.42	0.48	0.52	0.59	100	0.300	15.5	15.50%	1.814	476	0.300	25.0	5.25%	10.385	69	0.020	1.0	1.45%	0.191		0.509	0.045		0.00%	0.000	0.000	12.39	4.23	6.33	7.54	9.64	1.32	2.23	2.90	4.24
D6-B		24.9%	2.891	0.43	0.49	0.53	0.60	100	0.300	6.0	6.00%	2.916	370	0.300	28.0	7.57%	6.725	448	0.020	9.0	2.01%	1.054		0.509	0.045		0.00%	0.000	0.000	10.69	4.50	6.72	7.99	10.16	5.59	9.46	12.23	17.76
SWALE 2	SWALE 4E	28.7%	0.961	0.44	0.50	0.55	0.62	100	0.300	2.0	2.00%	5.051	122	0.300	4.0	3.28%	3.369	0	0.020	0.0	0.00%	0.000	98	0.509	0.045	4.9	5.00%	4.720	0.346	8.77	4.85	7.24	8.58	10.85	2.07	3.50	4.50	6.48
SWALE 3	N/A	6.8%	6.732	0.36	0.41	0.45	0.52	100	0.300	2.5	2.50%	4.518	716	0.300	59.0	8.24%	12.471	0	0.020	0.0	0.00%	0.000	695	0.509	0.045	21.0	3.02%	3.869	3.157	20.15	3.36	5.05	6.05	7.85	8.07	13.91	18.31	27.56
SWALE 4A	SWALE 4A	0.0%	2.131	0.33	0.38	0.42	0.49	100	0.300	2.5	2.50%	4.518	365	0.300	34.5	9.45%	5.936	0	0.020	0.0	0.00%	0.000	79	0.509	0.045	1.5	1.90%	2.909	0.453	10.91	4.46	6.67	7.93	10.09	3.14	5.40	7.10	10.54
SWALE 4B	SWALE 4B	0.0%	3.536	0.33	0.38	0.42	0.49	100	0.300	1.5	1.50%	5.832	393	0.300	43.0	10.94%	5.941	0	0.020	0.0	0.00%	0.000	362	0.509	0.045	20.0	5.52%	4.961	1.216	12.99	4.15	6.20	7.39	9.47	4.84	8.34	10.98	16.40
SWALE 4C	SWALE 4C	0.0%	0.128	0.33	0.38	0.42	0.49	100	0.300	11.0	11.00%	2.154	45	0.300	8.0	17.78%	0.534	0	0.020	0.0	0.00%	0.000	78	0.509	0.045	3.0	3.85%	4.140	0.314	5.00	5.76	8.57	10.11	12.54	0.24	0.42	0.54	0.78
SWALE 4D	SWALE 4D	0.0%	0.147	0.33	0.38	0.42	0.49	15	0.300	3.5	23.33%	0.222	0	0.300	0.0	0.00%	0.000	0	0.020	0.0	0.00%	0.000	187	0.509	0.045	4.0	2.14%	3.087	1.010	5.00	5.76	8.57	10.11	12.54	0.28	0.48	0.62	0.90
SWALE 4E	SWALE 4E	18.7%	1.719	0.40	0.46	0.50	0.58	100	0.300	7.5	7.50%	2.608	306	0.300	6.5	2.12%	10.498	0	0.020	0.0	0.00%	0.000	65	0.509	0.015	0.3	0.50%	4.478	0.242	13.35	4.10	6.13	7.31	9.37	2.85	4.85	6.31	9.28

INLET CAPACITY
25 YR

					CURB INLET ON GRADE									SUMP INLET (CURB OR GRATE)						
Drainage Area	Inlet	Qpass taken (cfs)	Q(25) (cfs)	Q (a)	Yo (ft)	Qa/La (cfs/ft)	Length Needed (ft)	Length (ft)	LLreq	a/Yo	Q allowable (cfs)	Qpass (cfs)	Clogging Factor	Q(25) (cfs)	Q (a)	Length (ft)	h (ft)	Yo (ft)	Q allowable (cfs)	Qpass (cfs)
A1	A1	0.49	6.94	7.43	0.42	0.88	7.91	10	1.26	1.00	8.77	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A2	A2	0.00	9.63	9.63	0.45	0.91	10.54	10	0.95	0.93	9.15	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A3	A3	0.00	2.54	2.54	0.27	0.72	3.52	10	2.84	1.55	7.22	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A4	A4	0.00	6.73	6.73	0.33	0.79	8.55	10	1.17	1.26	7.86	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A5	A5	0.84	5.09	5.93	0.32	0.77	6.58	10	1.52	1.31	7.73	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A6	A6	0.00	13.92	13.92	0.41	0.87	15.96	15	0.94	1.01	13.08	0.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B1	B1	0.00	1.83	1.83	0.35	0.81	2.26	10	4.42	1.18	8.09	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B2	B2	0.00	14.28	14.28	0.50	0.97	14.72	20	1.36	0.83	19.40	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
C1-A	C1	0.00	4.09	4.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	4.09	4.09	10	0.73	0.31	23.71	0.00
C1-B																				
C2-A	C2	0.00	16.21	16.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	16.21	16.21	10	0.93	0.51	23.71	0.00
C2-B																				
C3	C3	0.48	3.86	4.34	0.34	0.79	4.87	10	2.65	1.24	7.92	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
C4	C4	0.00	5.90	5.90	0.39	0.85	6.93	10	1.44	1.06	8.52	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D1	D1	0.00	3.73	3.73	0.31	0.76	4.91	10	2.04	1.36	7.60	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D2	SWALE 1 to D2	0.00	15.96	15.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	15.96	15.96	3	1.00	N/A	32.40	0.00
D3	D3	1.18	7.62	8.80	0.37	0.83	9.16	10	1.09	1.11	8.32	0.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D4	D4	0.00	10.06	10.06	0.43	0.89	11.33	10	0.88	0.98	8.88	1.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D5-A	D5	0.00	2.85	2.85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	2.85	2.85	10	0.65	0.24	23.71	0.00
D5-B																				
D6-A	D6	0.00	15.13	15.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	15.13	15.13	10	0.83	0.41	23.71	0.00
D6-B																				

INLET CAPACITY
100 YR

					CURB INLET ON GRADE								INLET (CURB OR GRATE)							
Drainage Area	Inlet	Qpass taken (cfs)	Q(100) (cfs)	Q (a)	Yo (ft)	Qa/La (cfs/ft)	Length Needed (ft)	Length (ft)	LLreq	a/Yo	Q allowable (cfs)	Qpass (cfs)	Clogging Factor	Q(100) (cfs)	Q (a)	Length (ft)	h (ft)	Yo (ft)	Q allowable (cfs)	Qpass (cfs)
A1	A1	4.12	10.02	14.14	0.48	0.95	10.58	10	0.95	0.87	9.47	4.67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A2	A2	0.00	13.82	13.82	0.50	0.97	14.25	10	0.70	0.83	9.70	4.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A3	A3	1.03	3.52	4.55	0.30	0.75	4.66	10	2.15	1.39	7.54	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A4	A4	0.00	9.31	9.31	0.37	0.83	11.24	10	0.89	1.12	8.28	1.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A5	A5	5.93	7.32	13.26	0.36	0.82	8.95	10	1.12	1.15	8.18	5.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
A6	A6	0.00	19.91	19.91	0.47	0.93	21.37	15	0.70	0.89	13.98	5.93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B1	B1	6.56	2.55	9.11	0.50	0.97	2.64	10	3.79	0.84	9.65	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
B2	B2	5.08	20.89	25.97	0.50	0.97	21.53	20	0.93	0.83	19.40	6.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
C1-A	C1	8.63	5.67	14.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	5.67	14.30	10	0.42	0.00	23.71	0.00
C1-B																				
C2-A	C2	4.67	23.57	28.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	23.57	28.24	10	0.42	0.00	23.71	4.53
C2-B																				
C3	C3	7.04	5.43	12.47	0.38	0.84	6.49	10	1.54	1.10	8.37	4.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
C4	C4	0.00	8.52	8.52	0.45	0.91	9.36	10	1.07	0.93	9.10	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D1	D1	0.00	5.16	5.16	0.34	0.80	6.47	10	1.55	1.22	7.98	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D2	SWALE 1 to D2	0.00	23.07	23.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	23.07	23.07	3	1.00	N/A	32.40	0.00
D3	D3	5.11	10.77	15.88	0.42	0.88	12.18	10	0.82	0.99	8.84	7.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D4	D4	0.00	14.64	14.64	0.49	0.95	15.36	10	0.65	0.86	9.53	5.11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D5-A	D5	0.00	3.96	3.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	3.96	3.96	10	0.42	0.00	23.71	0.00
D5-B																				
D6-A	D6	0.00	22.00	22.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	10%	22.00	22.00	10	0.42	0.00	23.71	0.00
D6-B																				

STREET CAPACITY
25 YR

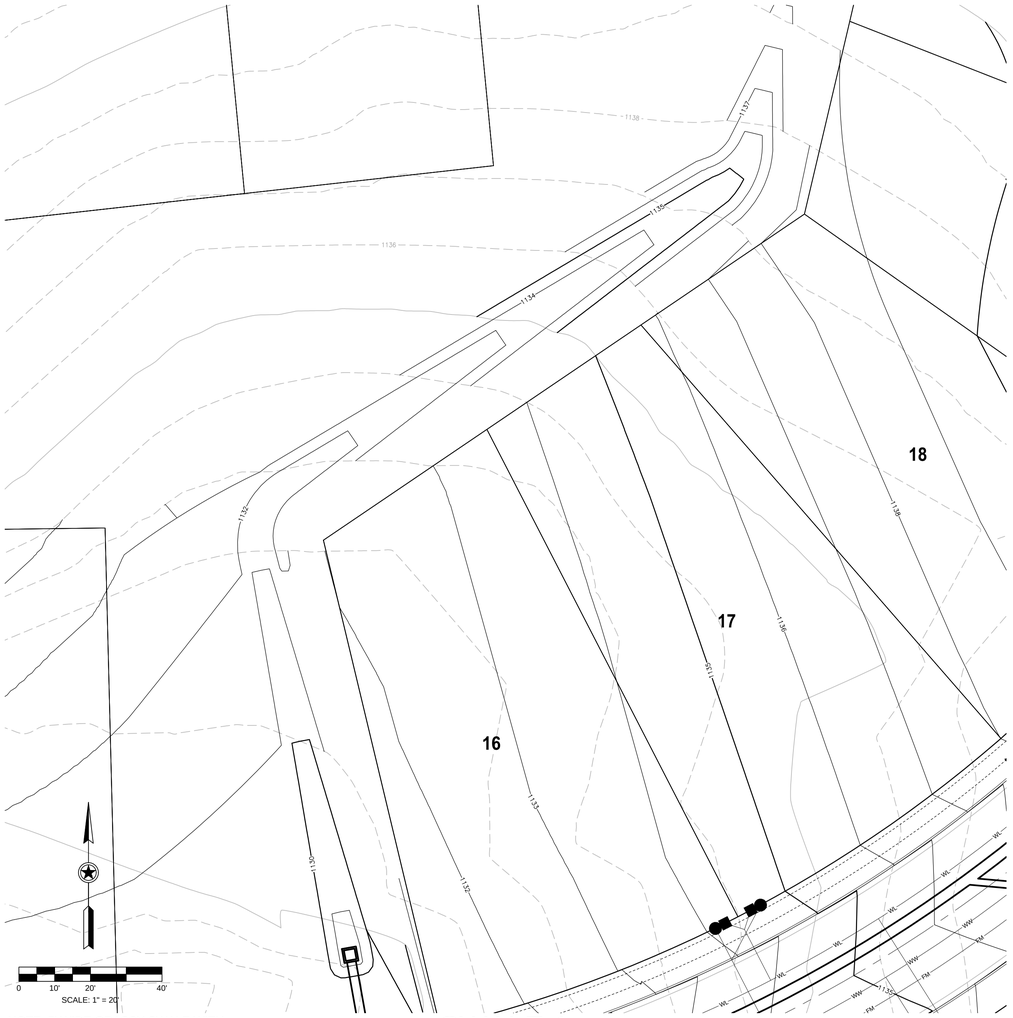
				STREET CAPACITY									
Drainage Area	Inlet	Qpass taken (cfs)	Q(25) (cfs)	Q(a) (cfs)	Street Width (ft)	Slope (ft/ft)	k0	k1	k2	Yo (ft)	Ponded Width	Q allowable (cfs)	Qpass (cfs)
A1	A1	0.00	6.94	6.94	40	0.0152	2.85	0.50	2.89	0.42	8.02	12.10	0.00
A2	A2	0.00	9.63	9.63	40	0.0186	2.85	0.50	2.89	0.45	8.92	13.41	0.00
A3	A3	0.00	2.54	2.54	40	0.0256	2.85	0.50	2.89	0.27	4.68	15.74	0.00
A4	A4	0.00	6.73	6.73	40	0.0533	2.85	0.50	2.89	0.33	6.00	22.69	0.00
A5	A5	0.00	5.09	5.09	40	0.0385	2.85	0.50	2.89	0.32	5.72	19.28	0.00
A6	A6	0.00	13.92	13.92	40	0.0652	2.85	0.50	2.89	0.41	7.89	25.10	0.00
B1	B1	2.23	1.83	4.06	28	0.0182	2.85	0.50	3.03	0.35	5.90	12.05	0.00
B2	B2	0.00	14.28	14.28	28	0.0182	2.85	0.50	3.03	0.53	14.00	12.04	2.23
C1-A	C1	0.00	1.36	1.36	40	0.0038	2.85	0.50	2.89	0.30	5.36	6.04	0.00
C1-B		0.00	2.73	2.73	40	0.0098	2.85	0.50	2.89	0.33	5.86	9.75	0.00
C2-A	C2	0.00	8.63	8.63	40	0.0065	2.85	0.50	2.89	0.52	20.00	7.94	0.69
C2-B		0.69	7.58	8.27	40	0.0073	2.85	0.50	2.89	0.50	20.00	8.38	0.00
C3	C3	0.00	3.86	3.86	40	0.0160	2.85	0.50	2.89	0.34	6.12	12.44	0.00
C4	C4	0.00	5.90	5.90	40	0.0154	2.85	0.50	2.89	0.39	7.42	12.19	0.00
D1	D1	0.00	3.73	3.73	40	0.0260	2.85	0.50	2.89	0.31	5.46	15.85	0.00
D2	SWALE 1 to D2	0.00	15.96	15.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D3	D3	0.00	7.62	7.62	40	0.0337	2.85	0.50	2.89	0.37	6.99	18.05	0.00
D4	D4	0.00	10.06	10.06	40	0.0280	2.85	0.50	2.89	0.43	8.26	16.44	0.00
D5-A	D5	0.00	0.80	0.80	28	0.0237	2.85	0.50	3.03	0.20	2.91	13.75	0.00
D5-B		0.00	2.05	2.05	28	0.0201	2.85	0.50	3.03	0.28	4.33	12.67	0.00
D6-A	D6	0.00	2.90	2.90	28	0.0145	2.85	0.50	3.03	0.33	5.35	10.75	0.00
D6-B		0.00	12.23	12.23	28	0.0201	2.85	0.50	3.03	0.50	10.63	12.66	0.00

STREET CAPACITY
100 YR

				STREET CAPACITY									
Drainage Area	Inlet	Qpass taken (cfs)	Q(100) (cfs)	Q(a) (cfs)	Street Width (ft)	Slope (ft/ft)	k0	k1	k2	Yo (ft)	Ponded Width	Q allowable (cfs)	Qpass (cfs)
A1	A1	0.41	10.02	10.43	40	0.0152	2.85	0.50	2.89	0.48	9.77	12.10	0.00
A2	A2	0.00	13.82	13.82	40	0.0186	2.85	0.50	2.89	0.51	20.00	13.41	0.41
A3	A3	0.00	3.52	3.52	40	0.0256	2.85	0.50	2.89	0.30	5.34	15.74	0.00
A4	A4	0.00	9.31	9.31	40	0.0533	2.85	0.50	2.89	0.37	6.90	22.69	0.00
A5	A5	0.00	7.32	7.32	40	0.0385	2.85	0.50	2.89	0.36	6.67	19.28	0.00
A6	A6	0.00	19.91	19.91	40	0.0652	2.85	0.50	2.89	0.47	9.36	25.10	0.00
B1	B1	8.84	2.55	11.39	28	0.0182	2.85	0.50	3.03	0.50	10.44	12.05	0.00
B2	B2	0.00	20.89	20.89	28	0.0182	2.85	0.50	3.03	0.61	14.00	12.04	8.84
C1-A	C1	4.58	1.89	6.46	40	0.0038	2.85	0.50	2.89	0.52	20.00	6.04	0.43
C1-B		3.10	3.78	6.88	40	0.0098	2.85	0.50	2.89	0.45	8.84	9.75	0.00
C2-A	C2	0.00	12.51	12.51	40	0.0065	2.85	0.50	2.89	0.59	20.00	7.94	4.58
C2-B		0.00	11.05	11.05	40	0.0073	2.85	0.50	2.89	0.56	20.00	8.38	2.67
C3	C3	0.00	5.43	5.43	40	0.0160	2.85	0.50	2.89	0.38	7.09	12.44	0.00
C4	C4	0.00	8.52	8.52	40	0.0154	2.85	0.50	2.89	0.45	8.80	12.19	0.00
D1	D1	0.00	5.16	5.16	40	0.0260	2.85	0.50	2.89	0.34	6.24	15.85	0.00
D2	SWALE 1 to D2	0.00	23.07	23.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00
D3	D3	0.00	10.77	10.77	40	0.0337	2.85	0.50	2.89	0.42	8.16	18.05	0.00
D4	D4	0.00	14.64	14.64	40	0.0280	2.85	0.50	2.89	0.49	9.93	16.44	0.00
D5-A	D5	0.00	1.11	1.11	28	0.0237	2.85	0.50	3.03	0.22	3.29	13.75	0.00
D5-B		0.00	2.85	2.85	28	0.0201	2.85	0.50	3.03	0.31	4.96	12.67	0.00
D6-A	D6	5.10	4.24	9.34	28	0.0145	2.85	0.50	3.03	0.48	9.79	10.75	0.00
D6-B		0.00	17.76	17.76	28	0.0201	2.85	0.50	3.03	0.56	14.00	12.66	5.10

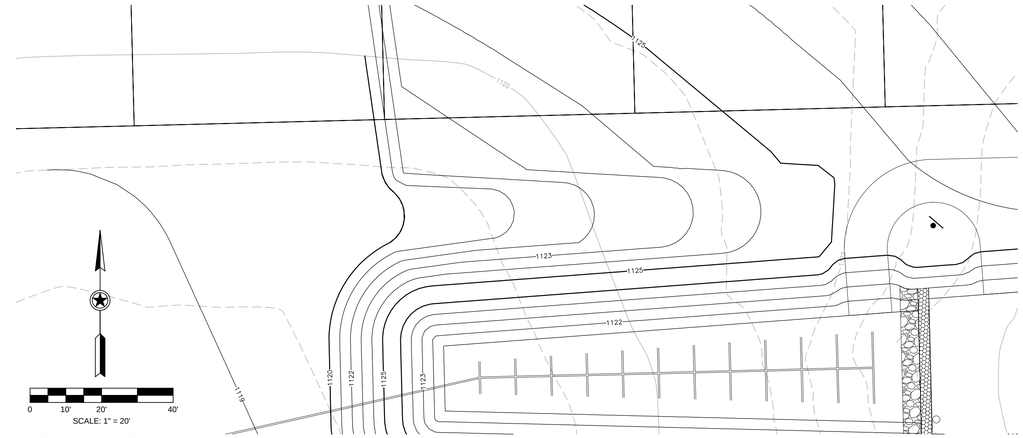
BELTERRA - Section 21-2 - Impervious Cover Allocation

Lot Number	Block Letter	Lot Size (ac)	TCEQ Assumed Impervious Cover (sf)
1	A	0.30	4,000
2	A	0.28	4,000
3	A	0.28	4,000
4	A	0.27	4,000
5	A	0.31	4,000
6	A	0.33	4,000
7	A	0.34	4,000
8	A	0.33	4,000
9	A	0.32	4,000
10	A	0.29	4,000
11	A	0.28	4,000
12	A	0.27	4,000
13	A	0.28	4,000
14	A	0.29	4,000
15	A	0.29	4,000
16	A	0.27	4,000
17	A	0.28	4,000
18	A	0.31	4,000
19	A	0.30	4,000
20	A	0.26	4,000
21	A	0.26	4,000
22	A	0.26	4,000
23	A	0.26	4,000
24	A	0.26	4,000
25	A	0.24	4,000
26	A



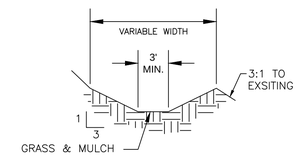
NOTE: 5' WIDE GRASSY SWALE WITH
MINIMUM 1' DEPTH AND
3:1 GRADING TO EXISTING.

SWALE 1



NOTE: AVG. 18' WIDE GRASSY SWALE WITH
MINIMUM 1' DEPTH AND
3:1 GRADING TO TIE INTO POND & LOT GRADING

SWALE 2



SWALE SECTION
NTS

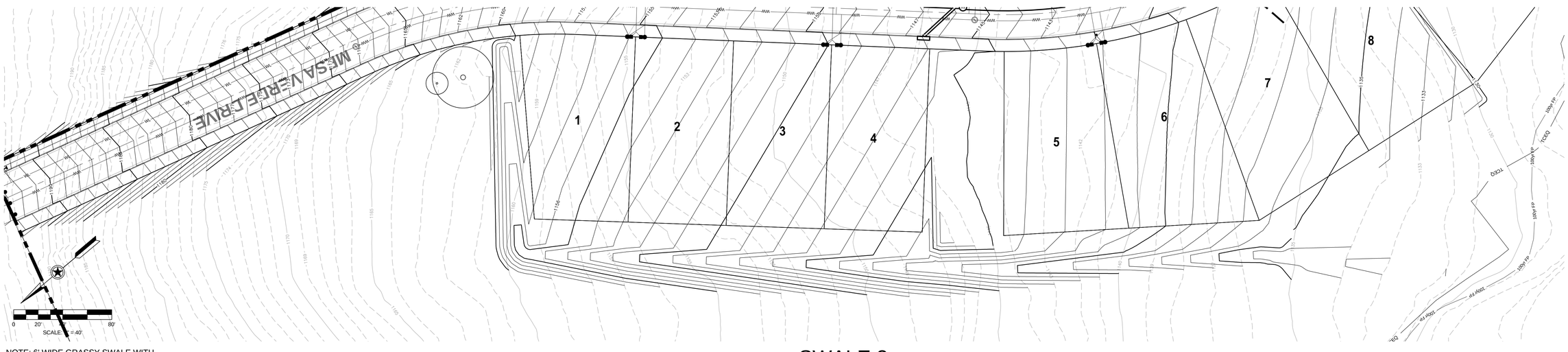
NOTE: AT LEAST 6" OF THE TOPSOIL MUST BE
STABILIZED WITH APPROPRIATE VEGETATION
AND IF NECESSARY LANDLOK 450.

SWALE CAPACITY
25 YR

Drainage Area	Swale	Q (25) (cfs)	Manning's n	Bottom Width (ft)	Left Slope X:1 (ft)	Right Slope X:1 (ft)	Depth (ft)	Channel Area (ft^2)	Min. Slope (ft/ft)	P allowable (ft)	R allowable (ft)	Q allowable (cfs)	Q (pass) (cfs)	V (ft/s)
SWALE 2	SWALE 2	4.50	0.045	18	3	3	1	21.0	0.033	24.32	0.86	114.22	0.00	1.61
SWALE 3	SWALE 3	18.31	0.045	6	3	3	1.5	15.8	0.023	24.10	0.65	79.77	0.00	3.20
D2	SWALE 1	15.96	0.045	5	3	3	1	8.0	0.020	11.32	0.71	29.63	0.00	3.09

SWALE CAPACITY
100 YR

Drainage Area	Swale	Q (100) (cfs)	Manning's n	Bottom Width (ft)	Left Slope X:1 (ft)	Right Slope X:1 (ft)	Depth (ft)	Channel Area (ft^2)	Min. Slope (ft/ft)	P allowable (ft)	R allowable (ft)	Q allowable (cfs)	Q (pass) (cfs)	V (ft/s)
SWALE 2	SWALE 2	6.48	0.045	18	3	3	1	21.0	0.033	24.32	0.86	114.22	0.00	1.88
SWALE 3	SWALE 3	27.56	0.045	6	3	3	1.5	15.8	0.023	24.10	0.65	79.77	0.00	3.62
D2	SWALE 1	23.07	0.045	5	3	3	1	8.0	0.020	11.32	0.71	29.63	0.00	3.45



NOTE: 6' WIDE GRASSY SWALE WITH
MINIMUM 1.5' DEPTH AND
3:1 GRADING TO EXISTING.

SWALE 3

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

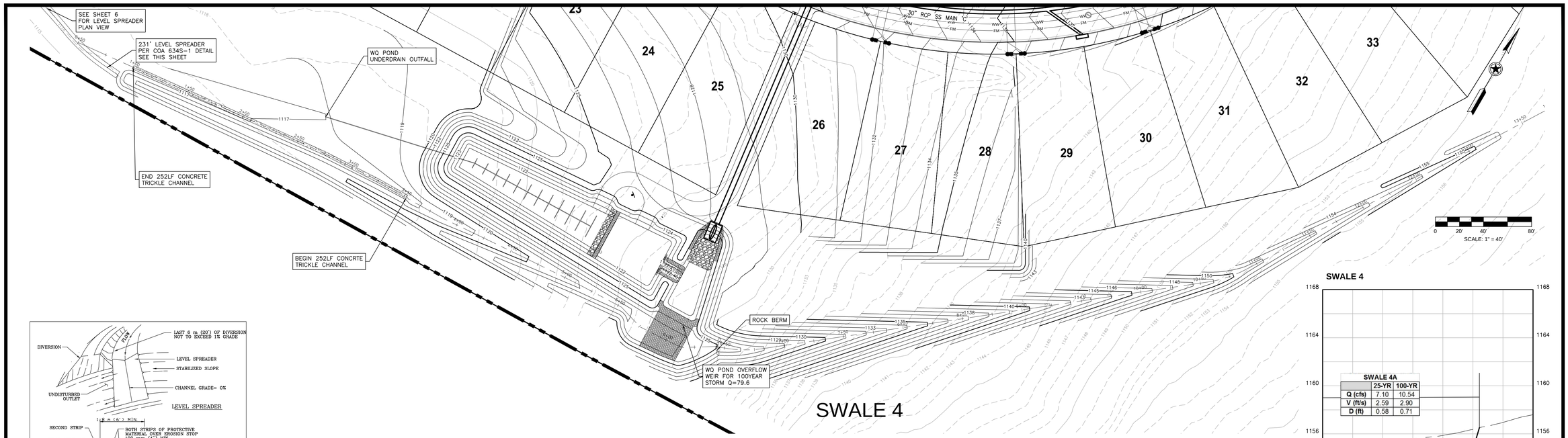
NO	DATE - DESCRIPTION

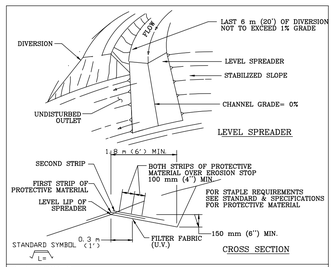
EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

SWALE PLAN

T:\Private\Maker\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-SSD.dwg

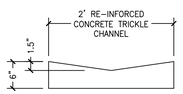




GENERAL NOTES:

1. LEVEL SPREADERS SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF THE ENGINEER.
2. CONSTRUCT LEVEL LIP ON ZERO PERCENT GRADE TO INSURE UNIFORM SPREADING OF SEDIMENT-FREE RUNOFF (CONVERTING CHANNEL FLOW TO SHEET FLOW).
3. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL (NOT ON FILL).
4. A MATTING EROSION STOP SHALL BE PLACED VERTICALLY AND AT LEAST 150 mm (6") DEEP IN A SILT TRENCH 0.3 m (1') BACK OF AND PARALLEL WITH THE LIP. THIS EROSION STOP SHALL EXTEND THE ENTIRE LENGTH OF THE LEVEL LIP AND SHALL BE TRIMMED AFTER BACKFILLING WITH TAMPED SOIL SO THAT THE UPPER EDGE IS FLUSH WITH THE SOIL SURFACE.
5. THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING 2 STRIPS OF JUTE, EXCELSIOR OR OTHER APPROVED PROTECTIVE MATERIAL AS SHOWN ABOVE.
6. THE ENTRANCE CHANNEL SHALL NOT EXCEED A 1% GRADE FOR AT LEAST 6 m (20') BEFORE ENTERING SPREADER.
7. STORM RUNOFF CONVERTED TO SHEET FLOW SHALL OUTLET ONTO STABILIZED AREAS. WATER SHALL NOT BE RECONCENTRATED IMMEDIATELY BELOW THE POINT OF DISCHARGE.
8. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PROVIDED.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	LEVEL SPREADER	
RECORD COPY SIGNED BY J. PATRICK MURPHY 3/27/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 634S-1



TRICKLE CHANNEL DETAIL

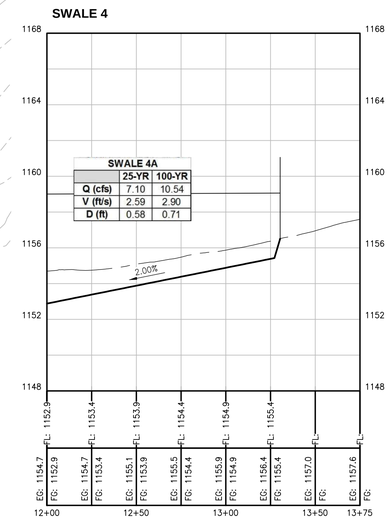
NTS

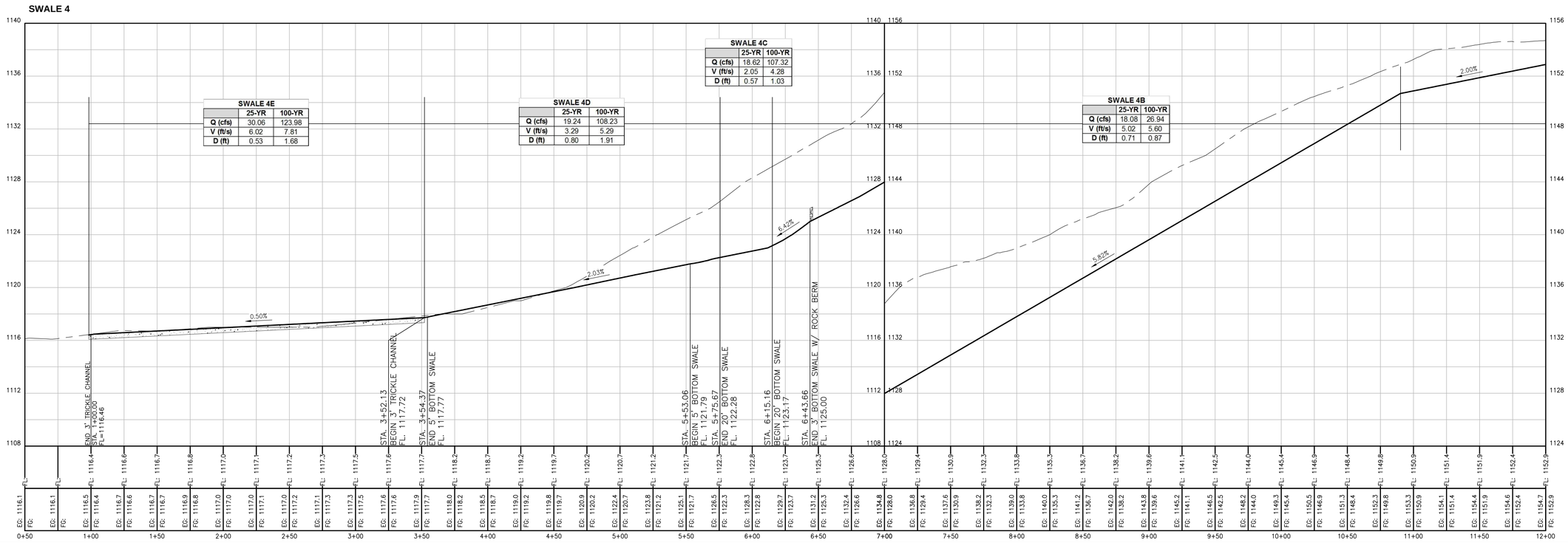
NOTES:

1. A REINFORCED CONCRETE CHANNEL MUST BE USED IF THE CHANNEL SLOPE IS LESS THAN TWO PERCENT.
2. PILOT CHANNEL MUST BE AT LEAST TWO(2) FEET WIDE, ONE AND HALF(1.5) INCHES DEEP, AND BE CAPABLE OF WITHSTANDING VEHICLULAR LOADING.
3. SIDE SLOPES SHALL BE SMOOTH EARTHEN FREE OF ROCK AND SHALL RECEIVE THE FOLLOWING, 6" OF TOPSOIL, HYDROMULCH AND A SOIL BLANKET, OR AND APPROVED RETENTION ALTERNATIVE.
4. EXPANSION JOINTS SHALL BE CONSTRUCTED EVERY 40'.
5. CONTROL JOINTS SHALL BE CONSTRUCTED AND SPACE EVERY 5'(MIN).

Level Spreader Design - SWALE 4		
Design Criteria: ECM 1.4.6, Permanent Structural Practices, (C) Level Spreader, (4) Design Criteria		
Q25YR Outfall (cfs) =	30.06	REF: Drainage Area Calculations
Level Spreader Length, L (ft) =	34	REF: ECM 1.4.6.C.4
V (ft/s) =	2	REF: Non-erosive velocity
C =	3	REF: Weir Coefficient
A (sf) =	15.03	REF: Q = VA, A = Q/V
H (ft) =	0.44	REF: A=LH, H = A/L
Q Spreader (cfs) =	29.97	REF: Broad Crested Weir Equation, Q = CLH^3/2

Level Spreader Design - SWALE 4		
Design Criteria: ECM 1.4.6, Permanent Structural Practices, (C) Level Spreader, (4) Design Criteria		
Q100YR Outfall (cfs) =	123.98	REF: Drainage Area Calculations
Level Spreader Length, L (ft) =	140	REF: ECM 1.4.6.C.4
V (ft/s) =	2.0	
C =	3	REF: Weir Coefficient
A (sf) =	61.99	REF: Q = VA, A = Q/V
H (ft) =	0.44	REF: A=LH, H = A/L
Q Spreader (cfs) =	123.75	REF: Broad Crested Weir Equation, Q = CLH^3/2





STEPHEN R. DELGADO 99342 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS 8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescod11

BELTERRA SECTION 21-2

PLAN & PROFILE: SWALE 4

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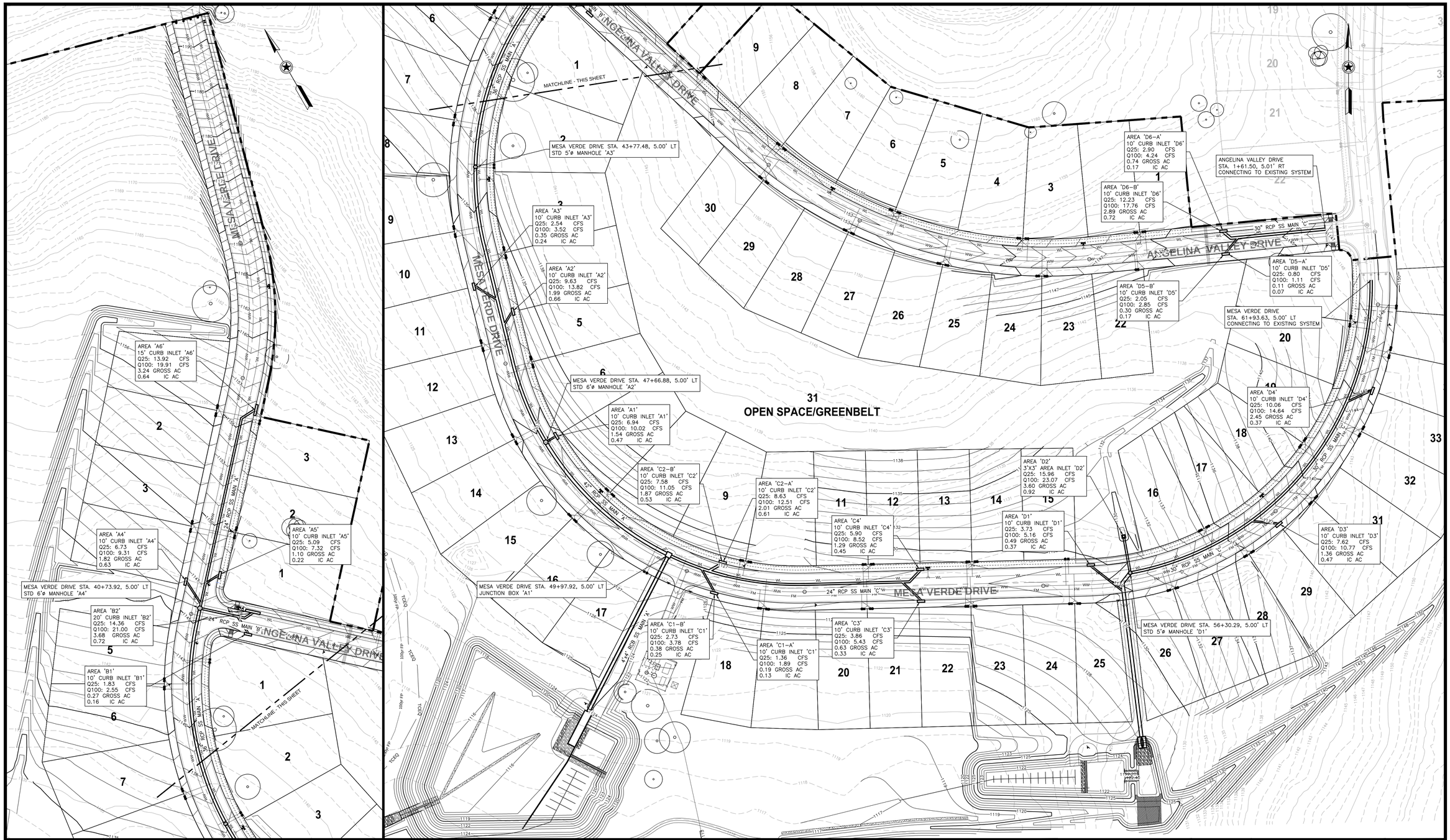
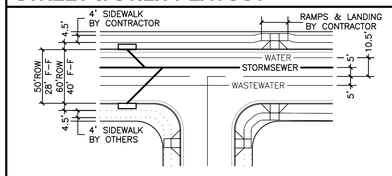


STREET & UTILITY LAYOUT



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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

750	EXISTING CONTOURS	FM	WW FM LINE AS NOTED
	PHASE BOUNDARY/ROW		WW FM CLEAN OUT
	DOUBLE WATER SERVICE		WW FLOW ARROW
	SINGLE WATER SERVICE	WW	WW MANHOLE AS NOTED
WL	WTR LN AS NOTED	WW	WW LINE AS NOTED
	AUTOMATIC AIR RELEASE VALVE		DOUBLE WASTEWATER SRVC
	WTR BLOW OFF VALVE		GRINDER PUMP
	FIRE HYDRANT		SINGLE WASTEWATER SRVC
	GATE VALVE AS NOTED		SS LINE AS NOTED
WM	EX. WATER METER	SS	STORM SEWER MANHOLE
			SS BOX CULVERT AS NOTED
T	ELECTRIC TRANSFORMER		SS LATERAL FROM CURB OR AREA INLET
	FITTINGS AS NOTED		

NOTES

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2. BEFORE DIGGING CALL TEXAS 811
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6. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THE INLET.
7. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
8. ALL PIPE BEDDING SHALL BE ¾" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACED ON TOP OF GRAVEL. (NO SAND)
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LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

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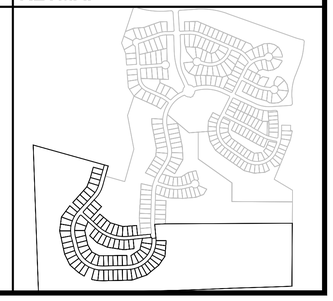
2)COLORADO MATERIALS- TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS- MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES- 1½" WASTEWATER BEDDING ROCK

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

KEYMAP



STATE OF TEXAS
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8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

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469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

STORM SEWER COLLECTION PLAN

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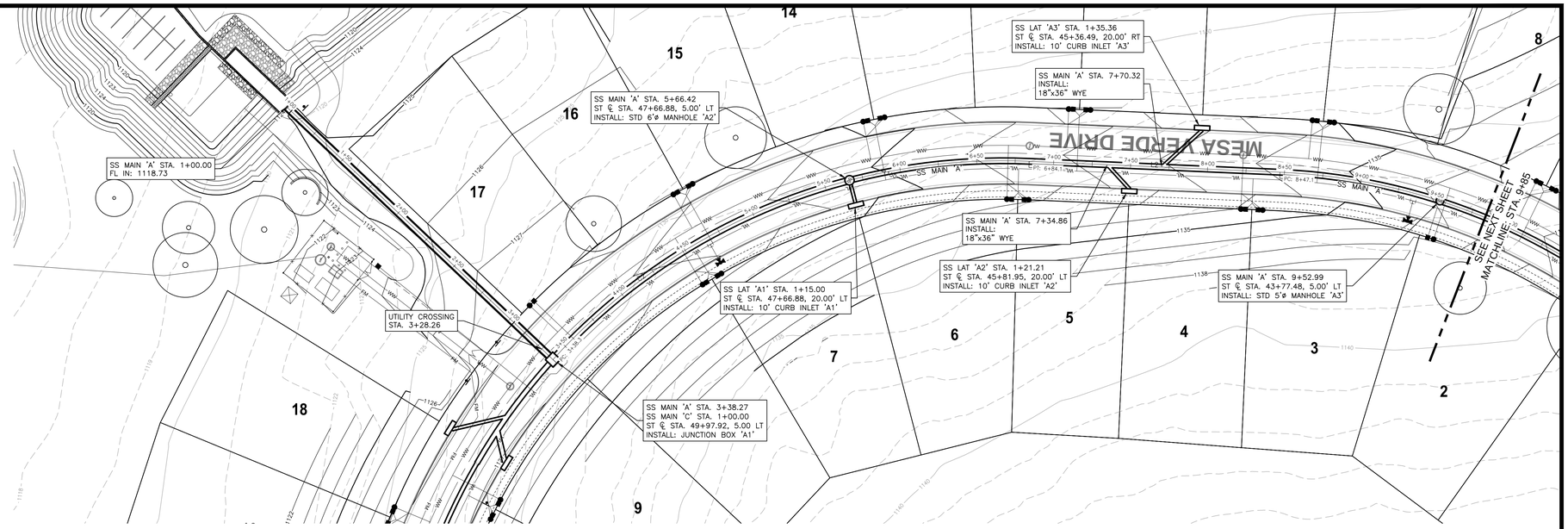
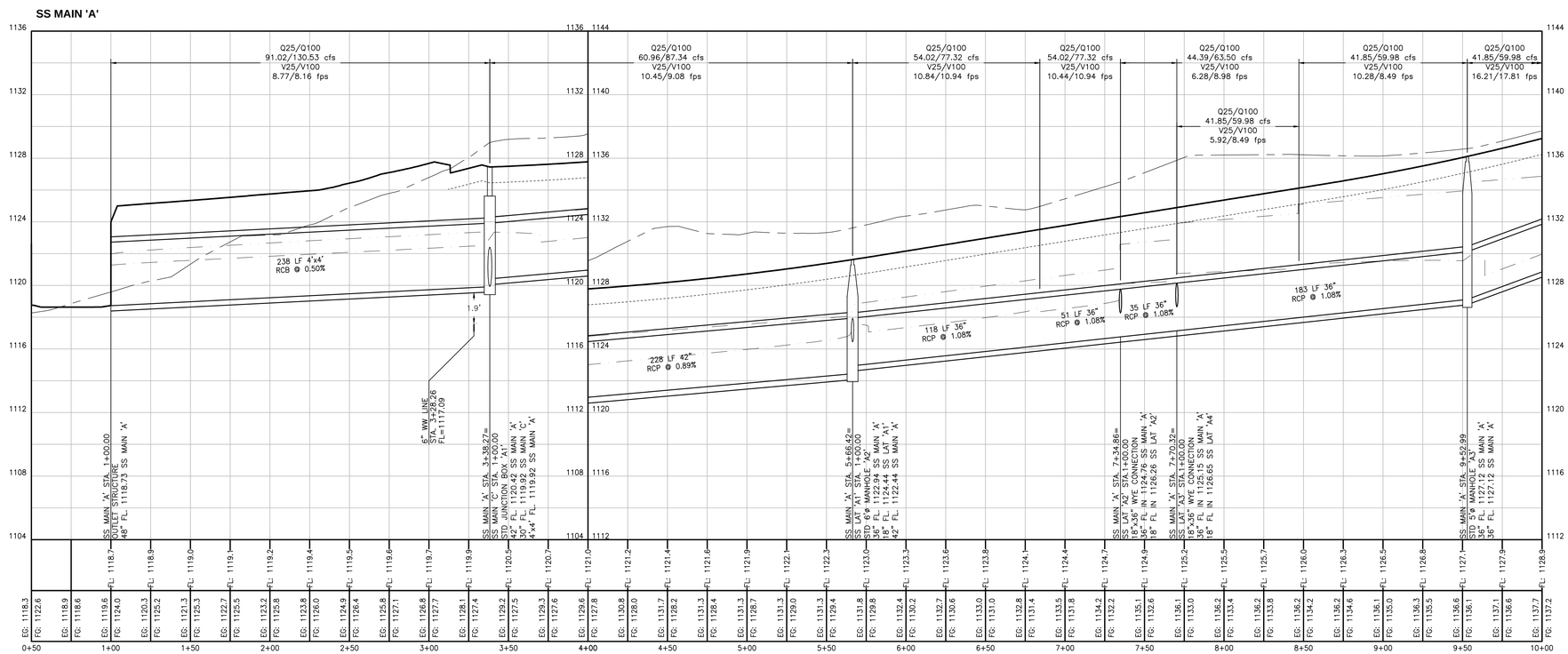


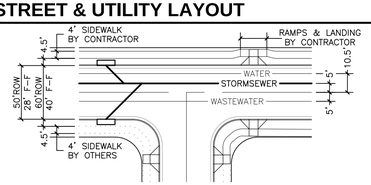


PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- 100yr HYDRAULIC GRADE LINE
- 25yr HYDRAULIC GRADE LINE

EG: 686.3	EXISTING GRADE ELEVATION AT STREET CENTER LINE
FG: 685.5	FINISHED GRADE ELEVATION AT STREET CENTER LINE
FL: 645.5	FLOW LINE

STREET & UTILITY LAYOUT



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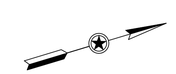
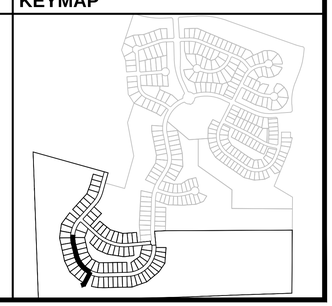
NORTH ARROW & SCALE



0 20' 40' 80'
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



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8/22/17

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PROJECT DATA	
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RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
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FEMA MAP PANEL:	48209C0140F

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CONSULTANTS:

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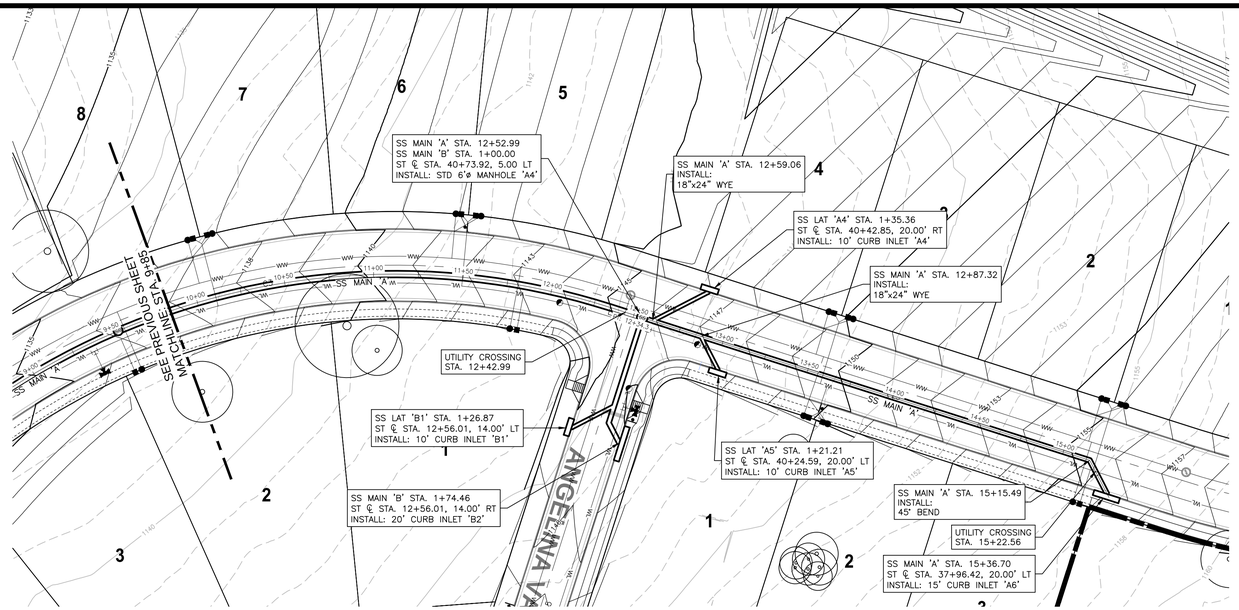
REVISIONS	
NO	DATE - DESCRIPTION

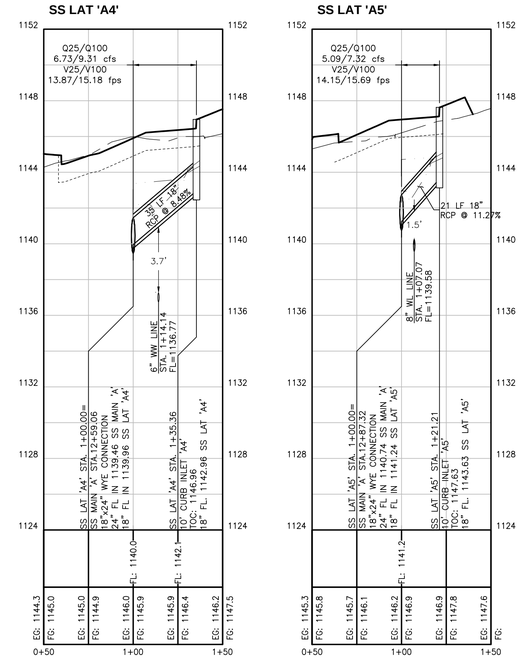
EDITED: September 21, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

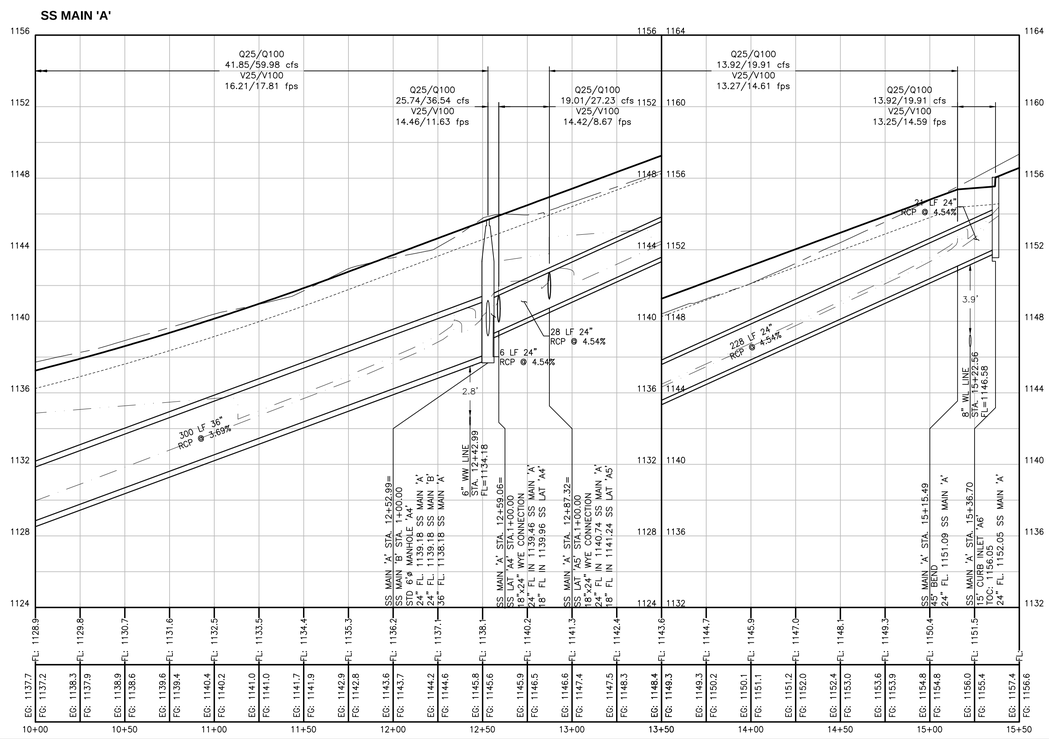
BELTERRA SECTION 21-2

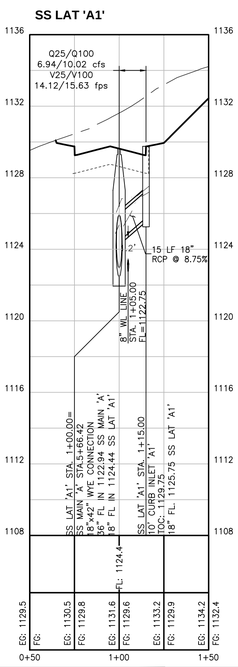
PLAN & PROFILE: STORM SEWER MAIN 'A', STA: 1+00-10+00

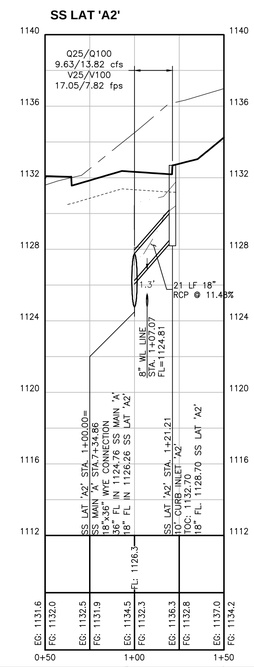
T:\Private\Mesa\Crescent Belterra\Design\PH 2 SEC 21\Dwgs Construction\S-CPESBELTRA_PH2_SEC21-SSP-MAIN 'A'.dwg

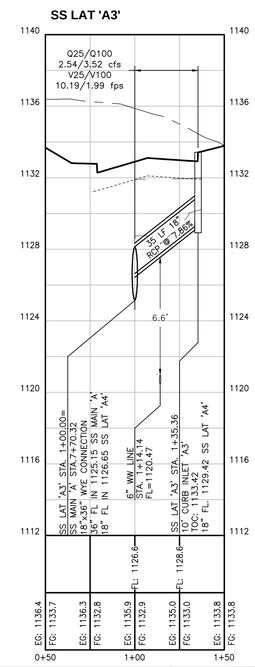












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- BASE GRADE BELOW CROWN
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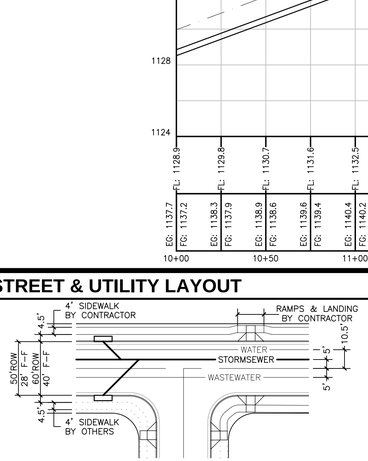
FL: 645.5	FLOW LINE

STREET & UTILITY LAYOUT



NOTES:
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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

- EXISTING CONTOURS
- PHASE BOUNDARY/ROW
- DOUBLE WATER SERVICE
- SINGLE WATER SERVICE
- WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- EX. WATER METER
- ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- SS LINE AS NOTED
- STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

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2. BEFORE DIGGING CALL TEXAS 811
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6. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THE INLET.
7. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
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10. ALL RCP SHALL BE CLASS III UNLESS OTHERWISE NOTED.
11. BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ¾" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

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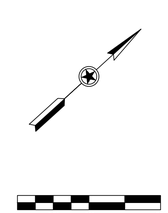
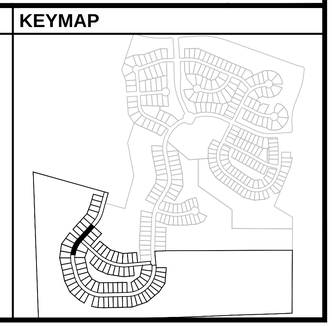
1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK

NORTH ARROW & SCALE



KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

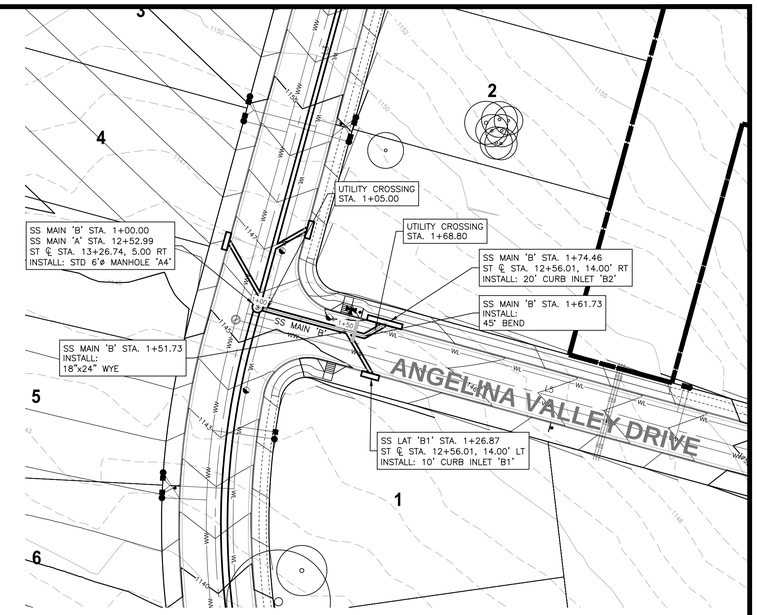
NO	DATE - DESCRIPTION

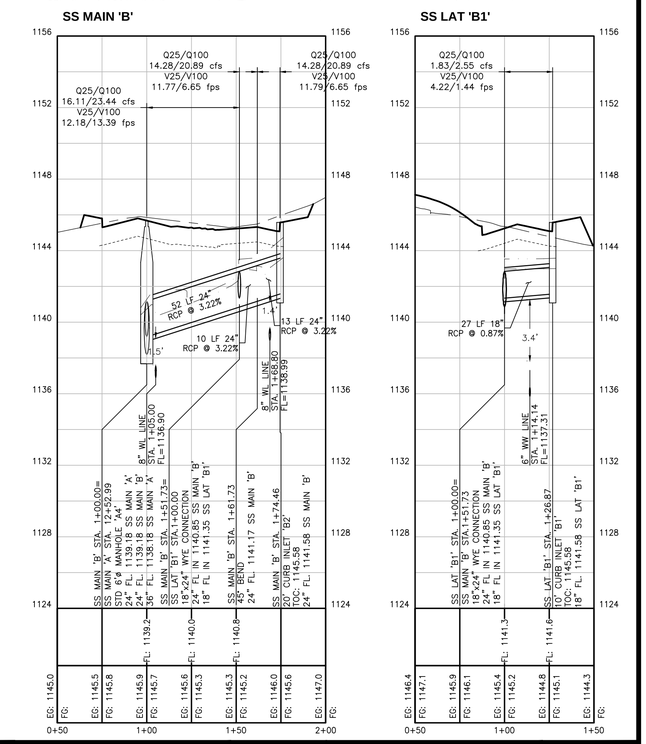
EDITED: September 21, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: STORM SEWER MAIN 'A', STA: 10+00-END

T:\Private\Master\Crescent Belterra\Design\Ph 2 SEC 21\Utils Construction\S-DRESBELTRA_PH2_SEC21-SSP-MAIN_A.dwg



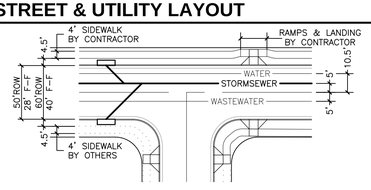


PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- 100yr HYDRAULIC GRADE LINE
- 25yr HYDRAULIC GRADE LINE

EG: 686.3	EXISTING GRADE ELEVATION AT STREET CENTER LINE
FG: 685.5	FINISHED GRADE ELEVATION AT STREET CENTER LINE
FL: 645.5	FLOW LINE

STREET & UTILITY LAYOUT



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- WW FLOW ARROW
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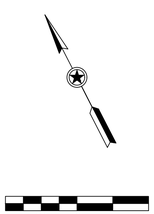
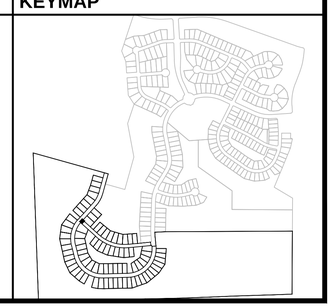
NORTH ARROW & SCALE



HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
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8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

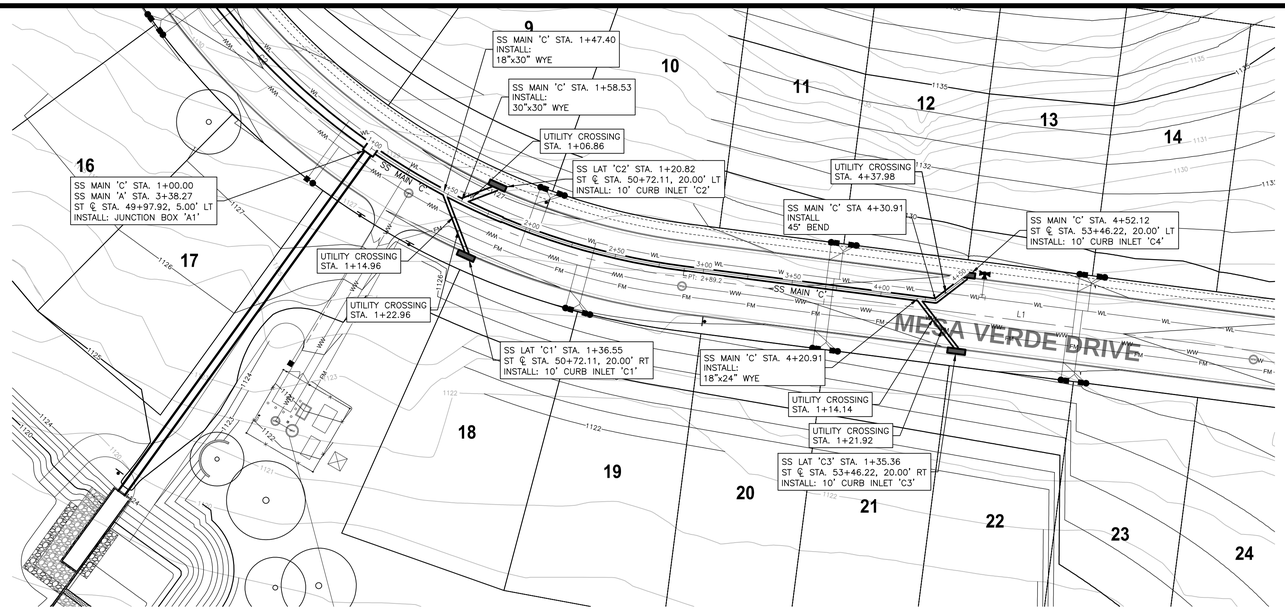
NO	DATE - DESCRIPTION

EDITED: September 21, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

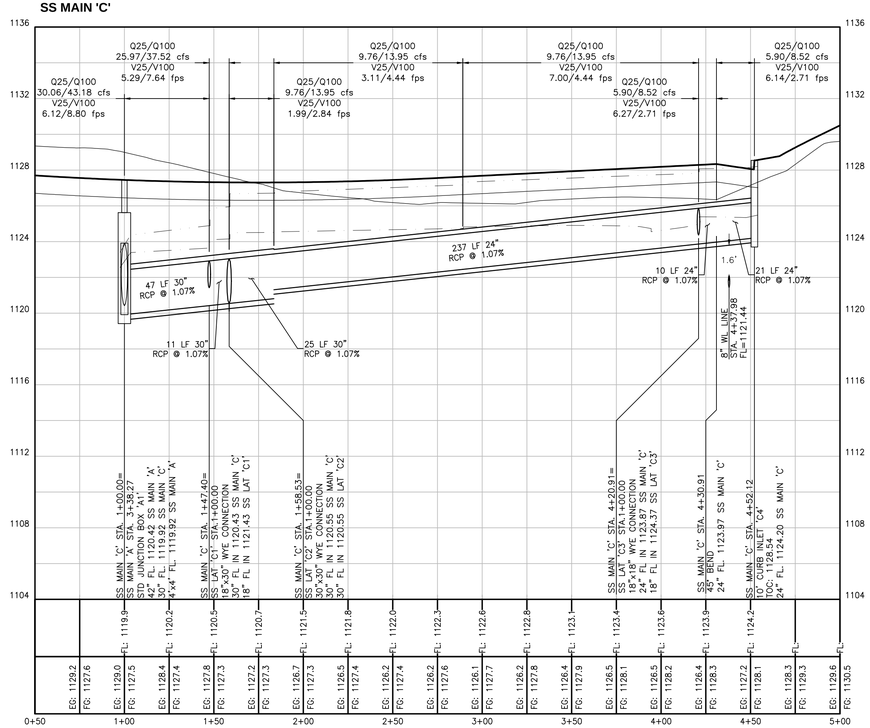
BELTERRA SECTION 21-2

PLAN & PROFILE: STORM SEWER MAIN 'B', STA: 1+00-END

T:\Private\Maker\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-SSP-MAIN 'B'.dwg



SS MAIN 'C'



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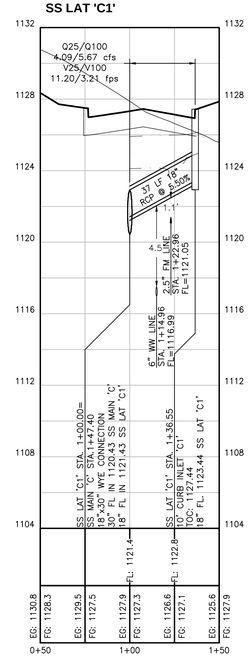
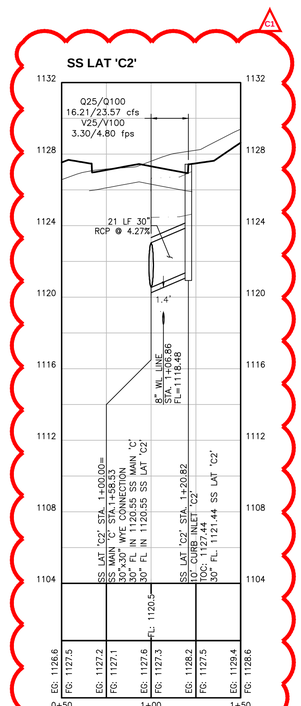


SS LAT 'C2'



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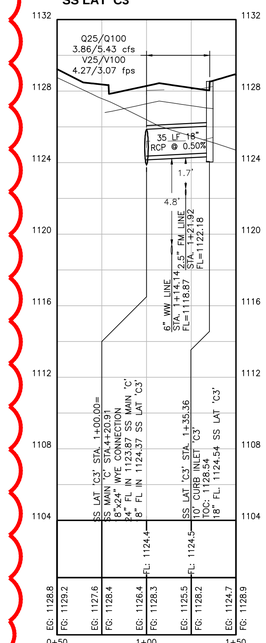
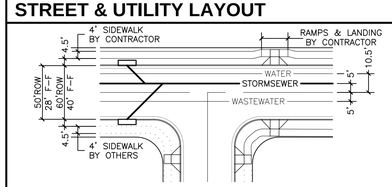


STREET & UTILITY LAYOUT



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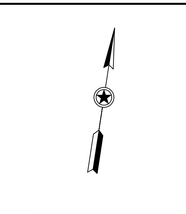
NORTH ARROW & SCALE



HORIZONTAL SCALE: 1" = 40'
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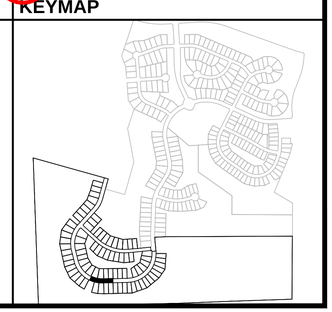

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
1/30/18

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

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400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

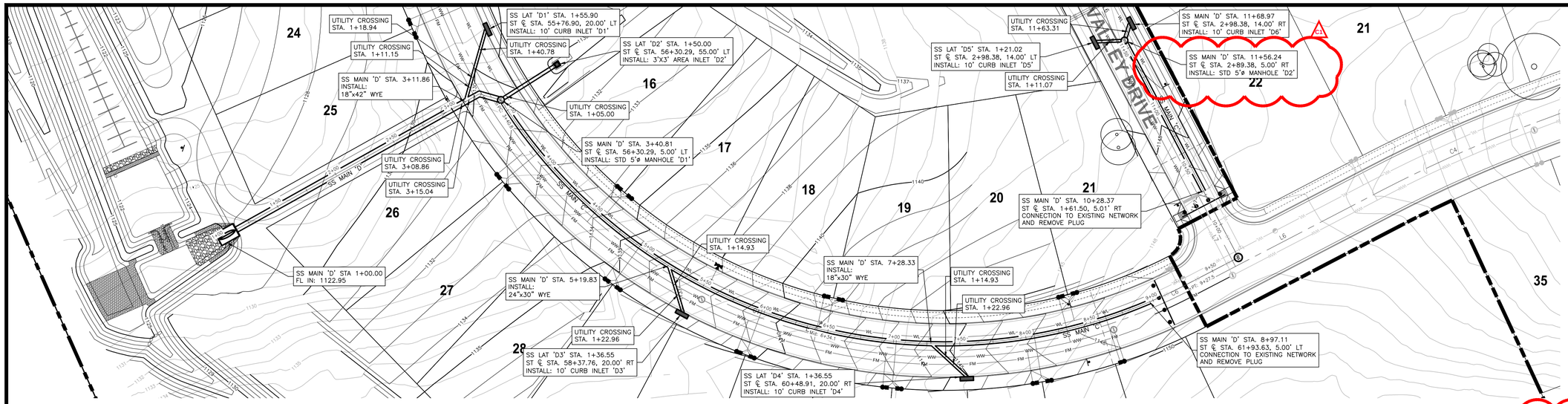
NO	DATE - DESCRIPTION
C1	2018-01-26-UPDATE STORM LATERAL 'C2' AND MAIN 'D'

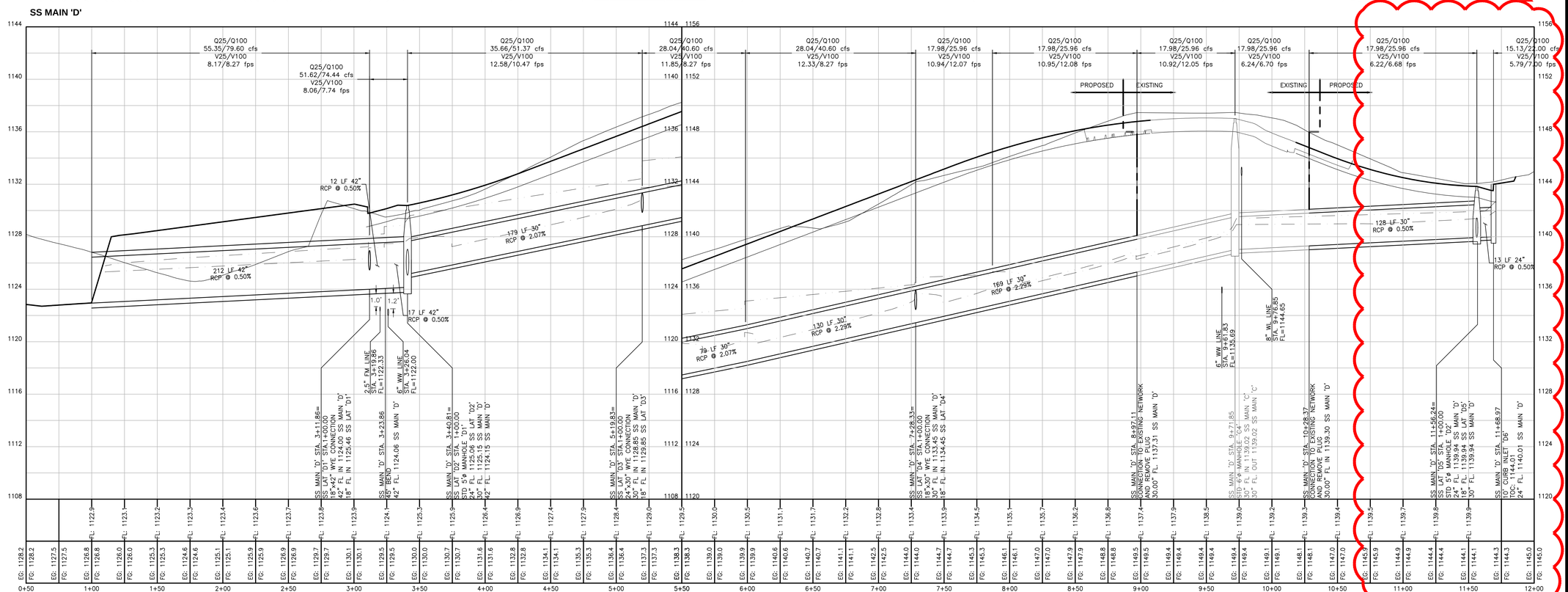
EDITED: September 21, 2015
PLOTTED: January 24, 2018
PLOTTED BY: Conrado Martinez

BELTERRA SECTION 21-2

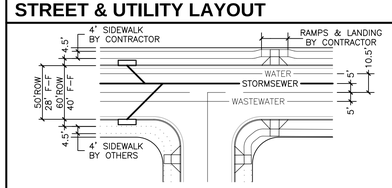
PLAN & PROFILE: STORM SEWER MAIN 'C', STA: 1+00-END

T:\Private\Master\Crescent Belterra\Design\Ph 2 SEC 21\D14 Construction\S-01C01BELTRA_PH2_SEC21-SSP-MAIN 'C'.dwg





STREET & UTILITY LAYOUT



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NORTH ARROW & SCALE

0 20' 40' 80'
HORIZONTAL SCALE: 1" = 40'
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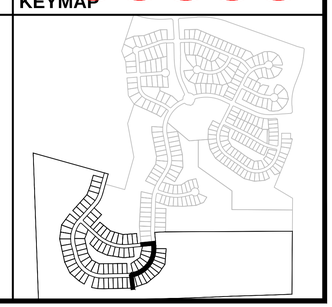
KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
1/30/18

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

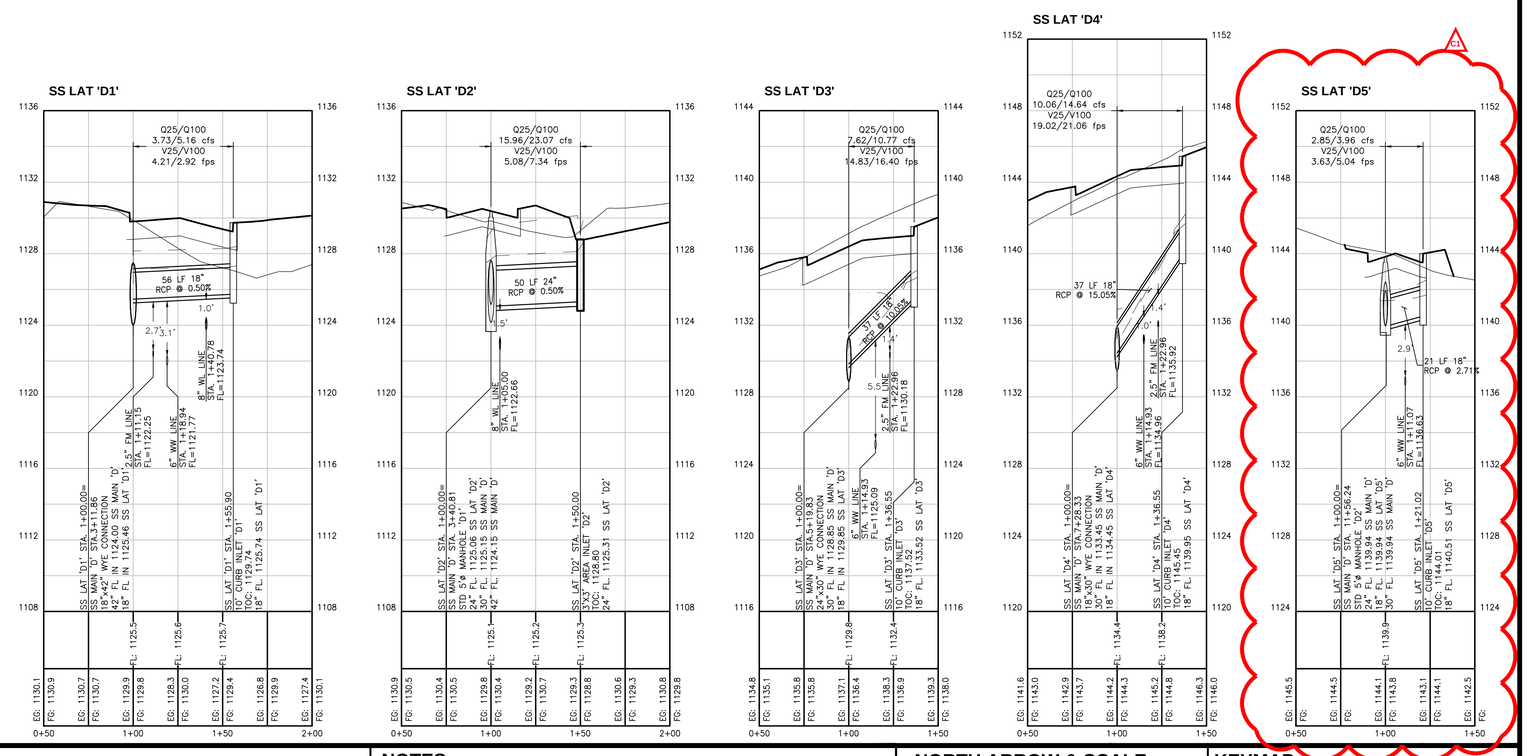
NO	DATE - DESCRIPTION
C1	2018-01-26-UPDATE STORM LATERAL 'C2' AND MAIN 'D'

EDITED: January 5, 2017
PLOTTED: January 24, 2018
PLOTTED BY: Conrado Martinez

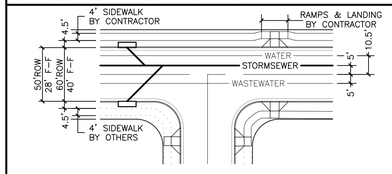
BELTERRA SECTION 21-2

PLAN & PROFILE: STORM SEWER MAIN 'D', STA: 1+00-END

T:\Private\Maxor\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-SSP-MAIN 'D'.dwg



STREET & UTILITY LAYOUT



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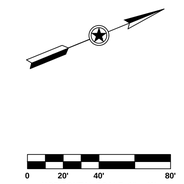

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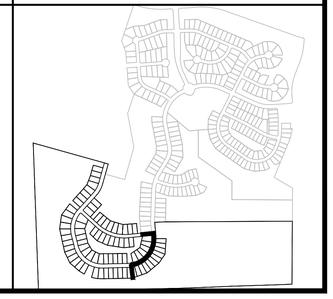

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EDITED: January 5, 2017
PLOTTED: January 24, 2018
PLOTTED BY: Conrado Martinez

BELTERRA SECTION 21-2

PLAN & PROFILE: STORM SEWER MAIN 'D', LATERALS

T:\Private\Mabar\Crescent Belterra\Design\PH 2 SEC 21\Situ Construction\S-CRESBELTRA_PH2_SEC21-SSP-MAIN 'D'.dwg

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Belterra Sec 21-2
Date Prepared: 5/23/2017

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348A (Appendix A - OEM) Pages 20 - 24

Page 3-29 Equation 3.3: $L_M = 27.7(A_I \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_I = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays	
Total project area included in plan * =	109.76	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan * =	11.06	acres
Total post-development impervious cover fraction * =	0.10	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	10110	lbs.

* The values entered in these fields should be for the total project area.

***Since the 0.17 acres of existing impervious cover from Section 21-1 was not treated, and 0.605 ac IC from future section 20-2 will drain to Sec 21-2, assume it is post-developed impervious cover for both the overall L_M & the L_M for POND 21-2

Number of drainage basins / outfalls areas leaving the plan area =	2	

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	POND A	
Total drainage basin/outfall area =	19.09	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	5.30	acres
Post-development impervious fraction within drainage basin/outfall area =	0.28	
$L_{M\ THIS\ BASIN}$ =	4845	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	Sand Filter	
Removal efficiency =	89	percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	19.09	acres
A_I =	5.30	acres
A_P =	13.79	acres
L_R =	5605	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ =	4845	lbs.
F =	0.86	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.46	inches
Post Development Runoff Coefficient =	0.29	
On-site Water Quality Volume =	28934	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	5787	
Total Capture Volume (required water quality volume(s) x 1.20) =	34721	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin =	NA	cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	NA	cubic feet

9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	34721	cubic feet	
Minimum filter basin area =	1607	square feet	
Maximum sedimentation basin area =	14467	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	3617	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	34721	cubic feet	
Minimum filter basin area =	2893	square feet	
Maximum sedimentation basin area =	11574	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	723	square feet	For maximum water depth of 8 feet

Detention Stage-Storage Table

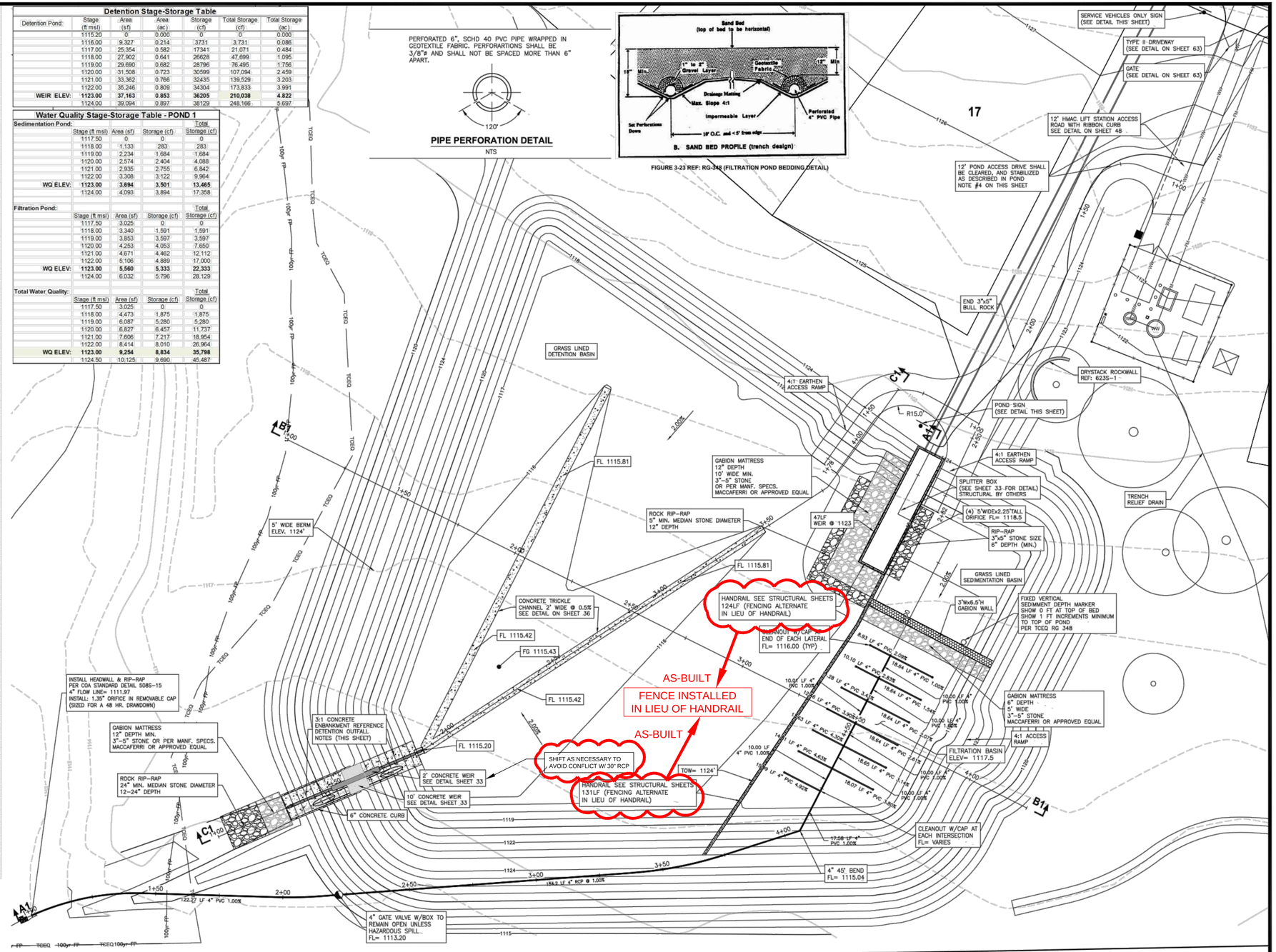
Detention Pond:	Stage (ft msl)	Area (s/f)	Area (ac)	Storage (cf)	Total Storage (cf)	Total Storage (ac)
	1115.20	0	0.000	0	0	0.000
	1116.00	9,327	0.214	3731	3,731	0.086
	1117.00	25,354	0.582	17341	21,071	0.484
	1118.00	27,902	0.641	26628	47,699	1.095
	1119.00	29,690	0.682	28796	76,495	1.756
	1120.00	31,508	0.723	30599	107,094	2.459
	1121.00	33,362	0.766	32435	139,529	3.203
	1122.00	35,246	0.809	34304	173,833	3.991
WEIR ELEV:	**1123.00**	**37,163**	**0.853**	**36205**	**210,038**	**4.822**
	1124.00	39,094	0.897	38129	248,166	5.697

Water Quality Stage-Storage Table - POND 1

Sedimentation Pond:	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1117.50	0	0	0
	1118.00	1,133	283	283
	1119.00	2,234	1,684	1,684
	1120.00	2,574	2,404	4,088
	1121.00	2,935	2,755	6,842
	1122.00	3,308	3,122	9,964
WQ ELEV:	**1123.00**	**3,694**	**3,501**	**13,465**
	1124.00	4,093	3,894	17,358

Filtration Pond:	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1117.50	3,025	0	0
	1118.00	3,340	1,591	1,591
	1119.00	3,853	3,597	3,597
	1120.00	4,253	4,053	7,650
	1121.00	4,671	4,462	12,112
	1122.00	5,106	4,889	17,000
WQ ELEV:	**1123.00**	**5,560**	**5,333**	**22,333**
	1124.00	6,032	5,796	28,129

Total Water Quality:	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1117.50	3,025	0	0
	1118.00	4,473	1,875	1,875
	1119.00	6,087	5,280	5,280
	1120.00	6,827	6,457	11,737
	1121.00	7,606	7,217	18,954
	1122.00	8,414	8,010	26,964
WQ ELEV:	**1123.00**	**9,254**	**8,834**	**35,798**
	1124.50	10,125	9,690	45,487



POND NOTES

1. POND SHALL BE MAINTAINED ACCORDING TO MAINTENANCE AGREEMENT ON RECORD AT TCEQ.
2. ALL POND BOTTOMS, SIDE SLOPES, AND EARTHEN EMBANKMENTS SHALL BE COMPACTED TO NINETY-FIVE (95) PERCENT MAXIMUM DENSITY, IN ACCORDANCE WITH TCEQ RG-348, 3-37.
3. MAINTENANCE EQUIPMENT ACCESS RAMP SHALL BE 12 FEET WIDE, NOT EXCEEDING 4H:1V.
4. ACCESS DRIVE SHALL BE A MINIMUM OF 12 FEET WIDE AND NOT EXCEED 15% GRADE. ACCESS DRIVE SHALL BE CLEARED, GRADED AND STABILIZED. (RG-348, 3-38) ACCESS DRIVE SHALL BE STABILIZED WITH ROAD BASE, DECOMPOSED GRANITE, OR PERMANENT TRM.
5. BASIN LINING REQUIREMENTS: IMPERMEABLE LINERS ARE NOT REQUIRED OVER THE EDWARDS AQUIFER CONTRIBUTING ZONE. HOWEVER AN IMPERMEABLE LINER SHALL BE USED IF THE PRESENCE OF GROUNDWATER IS DISCOVERED. IMPERMEABLE LINERS MAY BE CLAY, CONCRETE OR GEOMEMBRANE. IF GEOMEMBRANE IS USED, SUITABLE GEOTEXTILE FABRIC (SEE RG-348 TABLE 3-7 PG 3-39) SHOULD BE PLACED ON THE TOP AND BOTTOM OF THE MEMBRANE FOR PUNCTURE PROTECTION AND THE LINERS COVERED WITH A MINIMUM OF 6 INCHES OF COMPACTED TOPSOIL. THE TOPSOIL SHOULD BE STABILIZED WITH APPROPRIATE VEGETATION. GEOMEMBRANE LINERS SHOULD HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT. CLAY LINERS SHOULD HAVE A MINIMUM THICKNESS OF 12 INCHES AND SHOULD MEET THE SPECIFICATIONS IN TABLE 3-6 OF TCEQ RG-348 PG 3-38. INSTALLATION METHODS VARY ACCORDING TO SITE REQUIREMENTS.
6. SAND AND GRAVEL CONFIGURATION: A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN THE SEDIMENTATION BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 20% OF THE WATER QUALITY VOLUME AND SEDIMENT REMOVAL IS REQUIRED.
7. THE TRENCH DESIGN SAND FILTER IS CONSTRUCTED WITH 12 INCHES OF SAND OVERLYING 1-2 INCHES OF GRAVEL. TO PREVENT MIGRATION OF FINE MATERIAL, THE SAND AND GRAVEL MEDIA ARE SEPARATED BY PERMEABLE GEOTEXTILE FABRIC (SEE PLANS FOR SPECIFICATIONS). GEOTEXTILE FABRIC SHALL OVERLAP A MINIMUM OF 18 INCHES. FOUR-INCH PERFORATED PVC PIPE IS USED TO DRAIN CAPTURED FLOWS FROM THE GRAVEL LAYER. A MINIMUM OF 2 INCHES OF GRAVEL MUST COVER THE TOP SURFACE OF THE PVC PIPE. FIGURE 3-23 PRESENTS A SCHEMATIC REPRESENTATION OF A STANDARD SAND BED PROFILE.
8. SAND PROPERTIES: THE SAND GRAIN SIZE DISTRIBUTION SHOULD BE COMPARABLE TO THAT OF "WASHED CONCRETE SAND" (i.e., ASTM C-33 FIND AGGREGATE).
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10. SAND FILTER DISCHARGE: A VALVE MUST BE INSTALLED SO THAT DISCHARGE FROM THE BMP CAN BE STOPPED IN CASE RUNOFF FROM THE SPILL OF HAZARDOUS MATERIAL ENTERS THE SAND FILTER. THE CONTROL FOR THE VALVE MUST BE ACCESSIBLE AT ALL TIMES, INCLUDING WHEN THE BASIN IS FULL.
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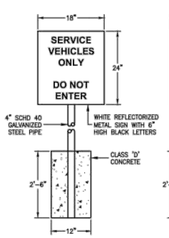
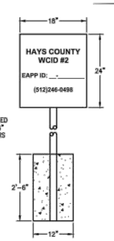


ACCESS DETAIL



POND SIGN DETAIL

NOTE: SIGN TO REFLECT OWNERSHIP AND CONTACT INFORMATION FOR CRESCENT BELTERRA AT (512) 246-0498 UNTIL AFTER WARRANTY PERIOD AND ACCEPTANCE BY HAYS COUNTY WCID NO. 2.

GEOTEXTILE FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	UNIT	UNIT
MATERIAL	NONWOVEN GEOTEXTILE FABRIC		
UNIT WEIGHT		OZ / SQ YD	8 (MIN)
FILTRATION RATE		IN / SEC	0.08 (MIN)
PUNCTURE STRENGTH	ASTM D-751 (MODIFIED)	LB	125 (MIN)
MULLEN BURST STRENGTH	ASTM D-751	PSI	400 (MIN)
TENSILE STRENGTH	ASTM D-1682	LB	200 (MIN)
EQUIVALENT OPENING SIZE	US STD SIEVE	NO	80 (MIN)

NOTE:
SEE SHEET 33
FOR CROSS SECTIONS

DETENTION OUTFALL NOTES

1. CONCRETE SHALL BE CLASS A, 4-INCH MINIMUM THICKNESS.
2. SUBGRADE SHALL BE MINIMUM 2-INCH SAND CUSHION.
3. REINFORCEMENT SHALL BE POLYPROPYLENE FIBRILATED FIBERS, OR 150 MM X 150 MM XMW9 XMW9 (6" X 6" X W1.4 XW1.4) WELDED WIRE FABRIC OR ONE LAYER 10M (#3) BARS PLACED NOT MORE THAN 450 mm (18") C.C. BOTH DIRECTIONS. REINFORCEMENT SHALL ACCURATELY PLACED AT SLAB MID-DEPTH AND HELD FIRMLY IN PLACE BY MEANS OF BAR SUPPORTS OF ADEQUATE STRENGTH AND NUMBER THAT WILL PREVENT DISPLACEMENT AND KEEP THE STEEL AT ITS PROPER POSITION DURING THE PLACEMENT OF THE P.C. CONCRETE. IN NO INSTANCE SHALL THE STEEL BE PLACED DIRECTLY ON THE SUBGRADE OR SAND CUSHION LAYER.
4. CONTROL JOINTS SHALL BE PLACED EVERY 5 FEET. EXPANSION JOINTS SHALL BE PLACED EVERY 40 FEET.
5. TOE WALL REQUIRED AT TOE OF SLOPE, 6-INCH X 6-INCH MINIMUM REINFORCED.
6. REFERENCE COA DETAIL 430S-1 AND 430S-3, OR APPROVED EQUAL, FOR 6-INCH CONCRETE SPILL CURB.
7. CONCRETE EMBANKMENT SHALL INCLUDE WEIR STRUCTURE IN COMPLIANCE WITH THE ABOVE.

GABION WALL NOTES

1. STONE: STONE FILL MATERIAL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE OF THE SIZE INDICATED. 5 TO 8 INCHES IN SIZE OR AS APPROVED BY THE ENGINEER AND RESISTANT TO THE ACTION OF AIR AND WATER AND SUITABLE IN ALL RESPECTS FOR THE PURPOSE INTENDED.
2. WIRE CONTAINERS: WIRE MESH SHALL CONSIST OF PLASTIC COATED (PVC) GALVANIZED WIRE 0.120 INCH IN DIAMETER MINIMUM AND SHALL EQUAL OR EXCEED FEDERAL SPECIFICATION QQ-W-481g CLASS 3 UNLESS OTHERWISE INDICATED. OPENING OF THE MESH SHALL NOT EXCEED APPROXIMATELY 4 INCHES IN THE LARGEST DIMENSION. THE WIRE MESH IS TO BE FABRICATED IN SUCH A MANNER AS TO BE NONRAVELING, TIE AND CONNECTING WIRE SHALL BE OF THE SAME TYPE AND SIZE AS THE BASKETS AND SHALL BE SUPPLIED IN SUFFICIENT QUANTITY FOR SECURELY FASTENING ALL EDGES OF THE GABION AND DIAPHGRAMS.
3. FILTER FABRIC: FILTER FABRIC SHALL BE NON-BIODEGRADABLE ULTRAVIOLET STABILIZED, INERT TO MOST SOIL CHEMICALS, UNAFFECTED BY MOISURE WHICH ALLOWS WATER TO PASS THROUGH WHILE RETAINING SOIL PARTICLES AND SHALL CONFORM TO ITEM NO. 620, "FILTER FABRIC".

0 10' 20' 40'
SCALE: 1" = 20'

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

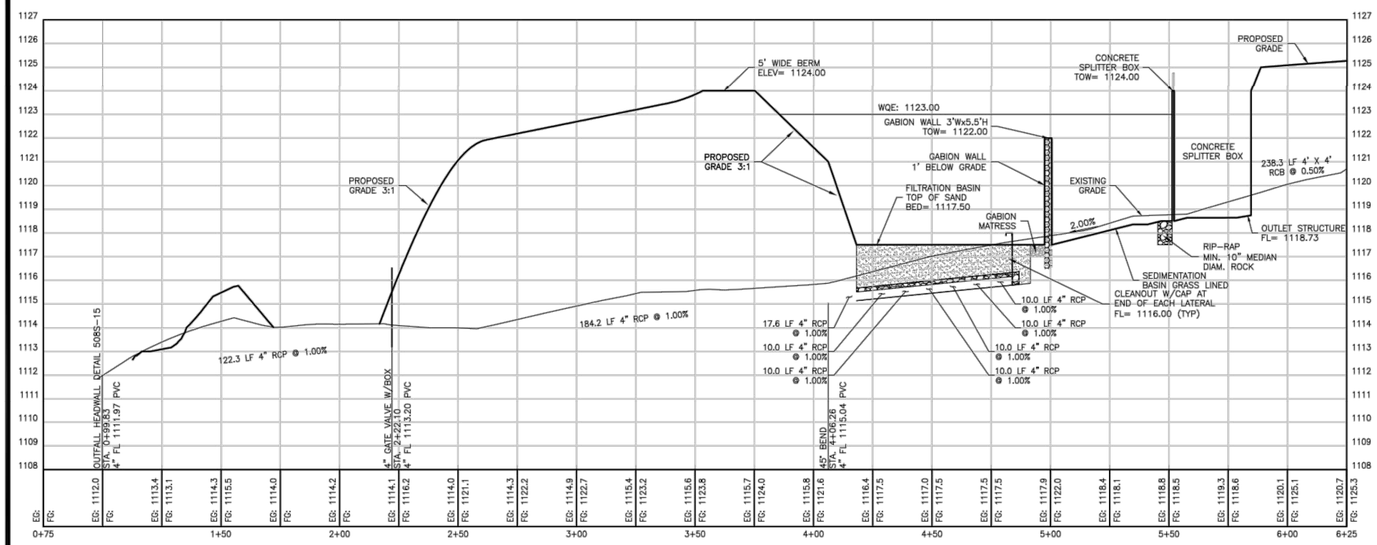
NO	DATE - DESCRIPTION

EDITED: June 28, 2016
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15-PC Carlos A. Martinez

BELTERRA SECTION 21-2

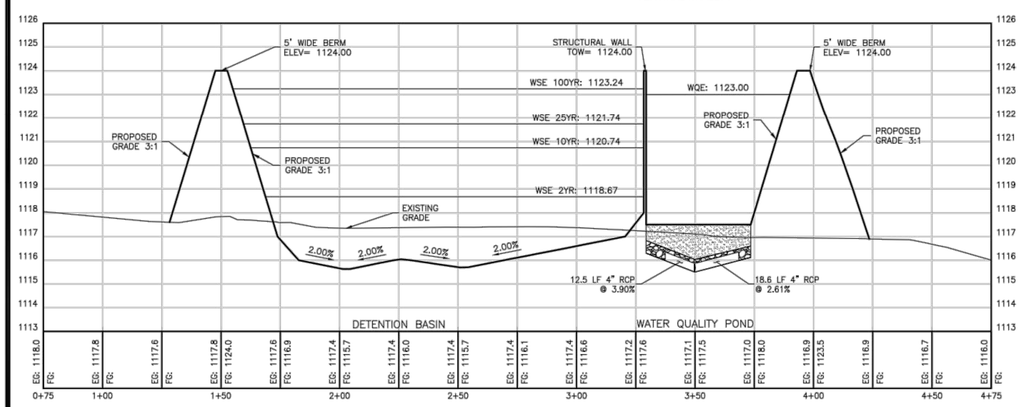
POND 1 PLAN VIEW

T:\Private\Water\Crescent Belterra\Design\Ph 2 SEC 21\Site Construction\S-CRESBELTPH_PH2_SEC21-PND.dwg



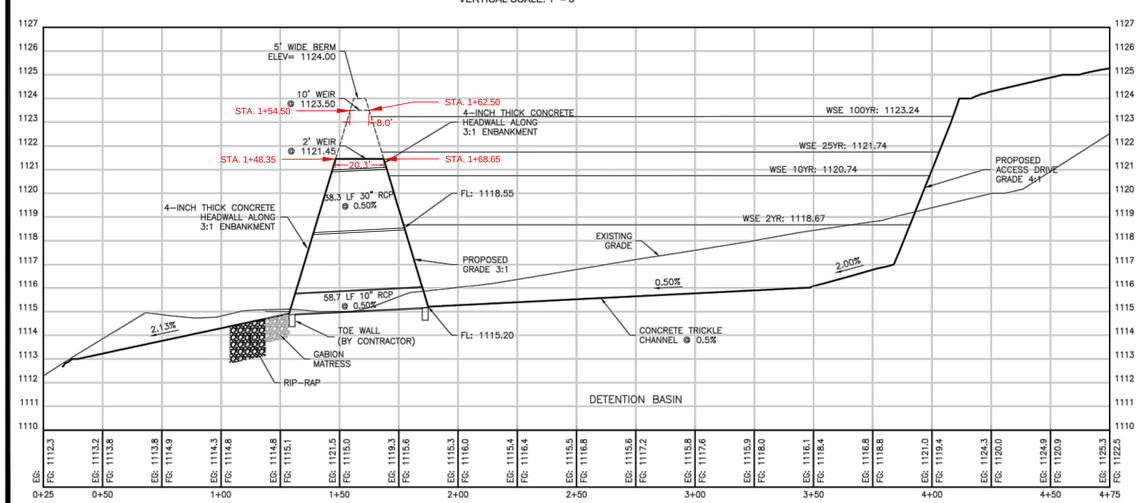
SECTION A1-A1

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



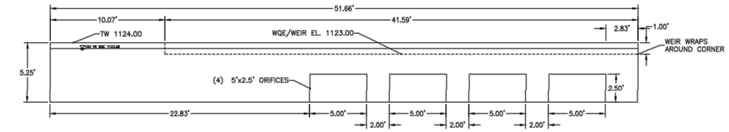
SECTION B1-B1

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



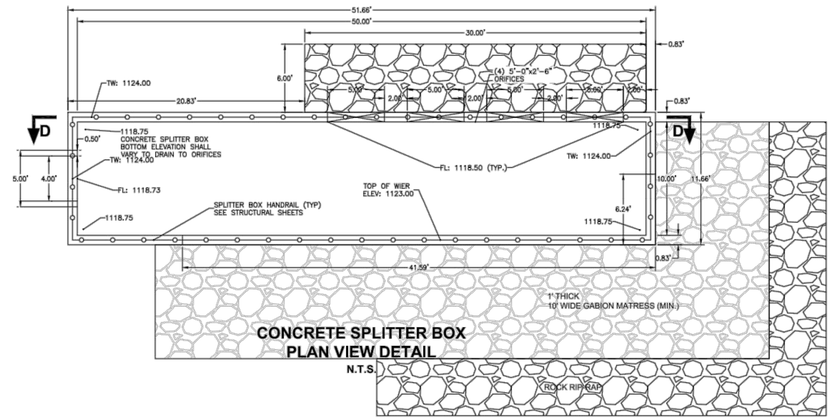
SECTION C1-C1

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



CONCRETE SPLITTER BOX SECTION D-D

N.T.S.



CONCRETE SPLITTER BOX PLAN VIEW DETAIL

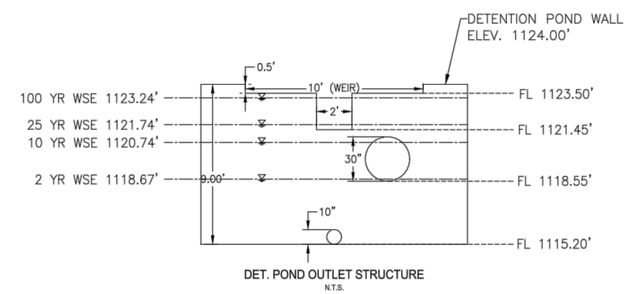
N.T.S.

Orifices from Splitter Box to Sedimentation Basin (POND 1)						Elev. (ft)	1119.00	1119.50	1120.00	1121.00	1122.00	1123.00
Orifice #	Height (ft)	Width (ft)	Area (ft^2)	Elev. pipe invert (ft)	C							
1	2.50	5.00	12.50	1118.5	0.6		0.00	0.00	30.09	67.29	90.28	108.50
2	2.50	5.00	12.50	1118.5	0.6		0.00	0.00	30.09	67.29	90.28	108.50
3	2.50	5.00	12.50	1118.5	0.6		0.00	0.00	30.09	67.29	90.28	108.50
4	2.50	5.00	12.50	1118.5	0.6		0.00	0.00	30.09	67.29	90.28	108.50
					Σ	Q=CA(2gH)^.5 (cfs)	0.00	0.00	120.37	269.17	361.12	434.02

Water Quality Pond 1 Splitter Box Orifices		
Event	PondPack Flow (cfs)	Velocity, ft/s (4) 5.0'(W) X 2.5'(H)
2 YR	33.3	0.7
25 YR	95.9	1.9
100 YR	133.9	2.7

POND 1 - SPLITTER WEIR TO BYPASS			
WEIR LENGTH PROVIDED	=	47.00	FT
Q100	=	133.90	CFS
COEFFICIENT	=	3	UNITLESS
HEAD TO PASS 100 YEAR STORM	=	0.97	FT
HEAD PROVIDED	=	1.00	FT

Broad Crested Weir from Splitter Box to Detention					Elev. (ft)	1123.50	1123.60	1123.70	1123.80	1123.90	1124.00
Weir #	Length (ft)	Weir Crest Elev. (ft)			C						
1	47.00	1123.00	Q=CL(H)^1.5	Q (cfs)	3.00	49.85	65.53	82.58	100.89	120.39	141.00



DET. POND OUTLET STRUCTURE

N.T.S.

DA - 1

STORM EVENT	TOTAL EXT FLOW (CFS)	TOTAL DEV FLOW (W/O DET. POND) (CFS)	TOTAL DEV FLOW (W/DET. POND) (CFS)
2 YR	205.59	225.54	197.20
10 YR	510.82	550.82	491.01
25 YR	694.86	744.61	677.70
100 YR	1,002.62	1067.81	986.29

*NOTE: DEVELOPED FLOWS WITH DETENTION MUST BE LESS THAN OR EQUAL TO EXISTING FLOWS

21-2 PONDPACK OUTPUT (6/19/17)

STORM EVENT	EX PT 1 Q (cfs)	DEV PT 1 w/o POND Q (cfs)	DEV PT 1 w/POND Q (cfs)	Q DEV - Q EX (cfs)	Pond Bypass (cfs)	Pond Inflow (cfs)	Target Outflow (cfs)	Estimated Storage (cf)	Provided Pond Outflow (cfs)	Pond Storage (cf)	Max WSE (ft)
2 YR	205.59	225.54	197.20	19.95	193.45	33.28	13.33	56,911	4.69	64896	1118.67
10 YR	510.82	550.82	491.01	40.00	479.76	72.85	32.85	117,322	26.52	129077	1120.74
25 YR	694.86	744.61	677.70	49.75	651.40	95.86	46.11	148,232	40.43	162902	1121.74
100 YR	1,002.62	1,067.81	986.29	65.19	938.07	133.90	68.71	197,277	65.41	217000	1123.24

Detention Pond Outfall Structure						Elev. (ft)		2-YR 1118.67	10-YR 1120.74	25-YR 1121.74	100-YR 1123.24	1124.00
Orifice(s)												
Orifice #	Diameter (ft)	Area (ft^2)	Elev. pipe invert (ft)	C								
1 (10-inch RCP)	0.83	0.55	1115.2	0.6				4.59	5.94	6.50	7.24	7.60
2 (30-inch RCP)	2.50	4.91	1118.55	0.6	Q=CA(2gH)^.5			0.10	20.57	32.91	43.80	48.42
						Σ	(cfs)	4.69	26.51	39.41	51.04	56.02
Broad Crested Weir(s)												
Weir #	Length (ft)		Weir Crest Elev. (ft)				C					
1A (Concrete)	2.00		1121.45				3.00	0.00	0.00	1.02	14.36	24.43
1B (Concrete)	8.00		1123.50				3.00	0.00	0.00	0.00	0.00	8.49
						Σ	(cfs)	0.00	0.00	1.02	14.36	32.92
						Total Discharge	(cfs)	4.69	26.51	40.43	65.41	88.94

REF: PondPack Output

FILTRATION POND 1 - DRAWDOWN CALCUALTIONS					
Stage (ft amsl)	Storage (cf)	Head (ft)	Relative Volume (cf)	Time To Drain (hr)	Outflow Velocity (fps)
1123	22333	9	5333	9.98	14.93
1122	17000	8	4889	9.71	14.07
1121	12112	7	4462	9.47	13.16
1120	7650	6	4053	9.29	12.19
1119	3597	5	2005	5.04	11.13
1118	1591	4	1591	4.47	9.96
1117.5	0	3.5	0	0.00	0.00
			Complete Drawdown Time:	47.96	

*Elevation of Downstream WSE =	1114	ft asml
*Orifice Diameter (inches) =	1.36	in
*24-Hour Drawdown Volume =	12251	cf

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: June 28, 2016
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD115-PC Carlos A. Martinez

BELTERRA SECTION 21-2

POND 1 SECTIONS

POND NOTES

1. POND SHALL BE MAINTAINED ACCORDING TO MAINTENANCE AGREEMENT ON RECORD AT TCEQ.
2. ALL POND BOTTOMS, SIDE SLOPES, AND EARTHEN EMBANKMENTS SHALL BE COMPACTED TO NINETY–FIVE (95) PERCENT MAXIMUM DENSITY, IN ACCORDANCE WITH TCEQ RG–348, 3–37.
3. MAINTENANCE EQUIPMENT ACCESS RAMP SHALL BE 12 FEET WIDE, NOT EXCEEDING 4H:1V.
4. ACCESS DRIVE SHALL BE A MINIMUM OF 12 FEET WIDE AND NOT EXCEED 15% GRADE. ACCESS DRIVE SHALL BE CLEARED, GRADED AND STABILIZED. (RG–348, 3–38) ACCESS DRIVE SHALL BE STABILIZED WITH ROAD BASE, DECOMPOSED GRANITE, OR PERMANENT TRM.
5. BASIN LINING REQUIREMENTS: IMPERMEABLE LINERS ARE NOT REQUIRED OVER THE EDWARDS AQUIFER CONTRIBUTING ZONE. HOWEVER AN IMPERMEABLE LINER SHALL BE USED IF THE PRESENCE OF GROUNDWATER IS DISCOVERED. IMPERMEABLE LINERS MAY BE CLAY, CONCRETE OR GEOMEMBRANE. IF GEOMEMBRANE IS USED, SUITABLE GEOTEXTILE FABRIC (SEE RG–348 TABLE 3–7 PG 3–39) SHOULD BE PLACED ON THE TOP AND BOTTOM OF THE MEMBRANE FOR PUNCTURE PROTECTION AND THE LINERS COVERED WITH A MINIMUM OF 6 INCHES OF COMPACTED TOPSOIL. THE TOPSOIL SHOULD BE STABILIZED WITH APPROPRIATE VEGETATION. GEOMEMBRANE LINERS SHOULD HAVE A MINIMUM THICKNESS OF 30 MILS AND BE ULTRAVIOLET RESISTANT. CLAY LINERS SHOULD HAVE A MINIMUM THICKNESS OF 12 INCHES AND SHOULD MEET THE SPECIFICATIONS IN TABLE 3–6 OF TCEQ RG–348 PG 3–38. INSTALLATION METHODS VARY ACCORDING TO SITE REQUIREMENTS.
6. SAND AND GRAVEL CONFIGURATION: A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN THE SEDIMENTATION BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EQUALS 20% OF THE WATER QUALITY VOLUME AND SEDIMENT REMOVAL IS REQUIRED.
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11. SAFETY IS PROVIDED BY MANAGING THE CONTOURS OF THE POND TO ELIMINATE DROPOFFS OR OTHER HAZARDS. EARTHEN SIDE SLOPES SHOULD NOT EXCEED 3:1 (H:V) AND SHOULD TERMINATE ON A FLAT SAFETY BENCH AREA.

Water Quality Stage-Storage Table - POND 2

Sedimentation Pond:

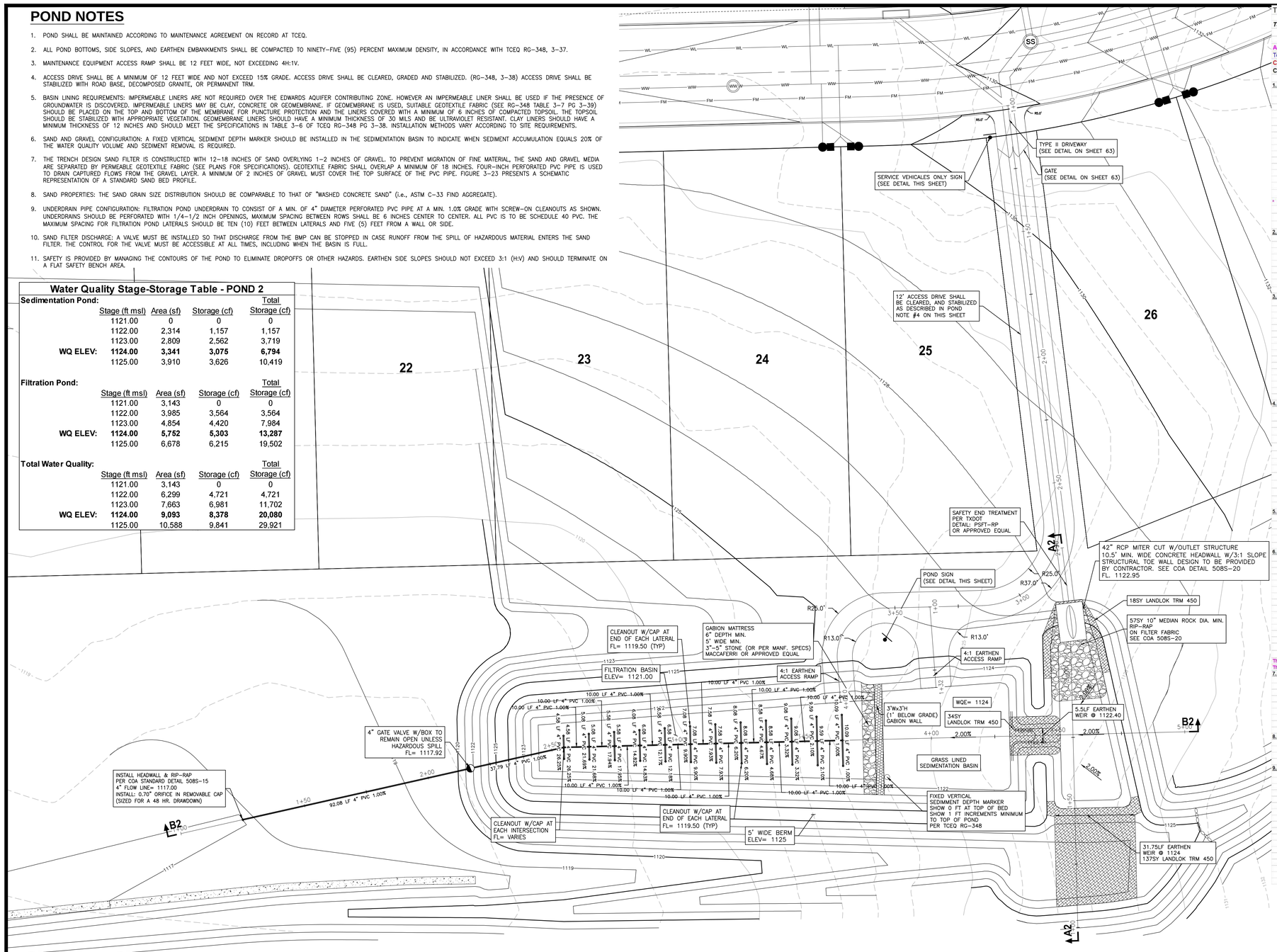
	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1121.00	0	0	0
	1122.00	2,314	1,157	1,157
	1123.00	2,809	2,562	3,719
WQ ELEV:	**1124.00**	**3,341**	**3,075**	**6,794**
	1125.00	3,910	3,626	10,419

Filtration Pond:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1121.00	3,143	0	0
	1122.00	3,985	3,564	3,564
	1123.00	4,854	4,420	7,984
WQ ELEV:	**1124.00**	**5,752**	**5,303**	**13,287**
	1125.00	6,678	6,215	19,502

Total Water Quality:

	Stage (ft msl)	Area (sf)	Storage (cf)	Total Storage (cf)
	1121.00	3,143	0	0
	1122.00	6,299	4,721	4,721
	1123.00	7,663	6,981	11,702
WQ ELEV:	**1124.00**	**9,093**	**8,378**	**20,080**
	1125.00	10,588	9,841	29,921



Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Belterra Sec 21-2
Date Prepared: 5/23/2017

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348A (Appendix A - OEM) Pages 20 - 24

Page 3-29 Equation 3.3: $L_M = 27.7(A_N \times P)$

where:
$L_{M\,TOTAL\,PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Hays		
Total project area included in plan * =	109.76	acres	
Predevelopment impervious area within the limits of the plan * =	0.00	acres	
Total post-development impervious area within the limits of the plan* =	11.06	acres	***Since the 0.17 acres of existing impervious cover from Section 21-1 was not treated, and 0.605 ac IC from future section 20-2 will drain to Sec 21-2, assume it is post-developed impervious cover for both the overall Lm & the Lm for POND 21-2
Total post-development impervious cover fraction * =	0.10		
P =	33	inches	
$L_{M\,TOTAL\,PROJECT}$ =	10110	lbs.	

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 2

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = POND B

Total drainage basin/outfall area =	13.57	acres	
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres	
Post-development impervious area within drainage basin/outfall area =	2.94	acres	*Includes the 0.17 acres of existing impervious cover from Section 21-2
Post-development impervious fraction within drainage basin/outfall area =	0.22		
$L_{M\,THIS\,BASIN}$ =	2687	lbs.	

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Sand Filter
Removal efficiency = 89 percent

Aquologic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	13.57	acres
A_I =	2.94	acres
A_P =	10.63	acres
L_R =	3156	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\,THIS\,BASIN}$ = 2687 lbs.

F = 0.85

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.37	inches
Post Development Runoff Coefficient =	0.23	
On-site Water Quality Volume =	15802	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	3160	
Total Capture Volume (required water quality volume(s) x 1.20) =	**18962**	**cubic feet**

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

7. Retention/Irrigation System Designed as Required in RG-348 Pages 3-42 to 3-46

Required Water Quality Volume for retention basin = NA cubic feet

Irrigation Area Calculations:

Soil infiltration/permeability rate =	0.1	in/hr	Enter determined permeability rate or assumed value of 0.1
Irrigation area =	NA	square feet	
	NA	acres	

8. Extended Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet

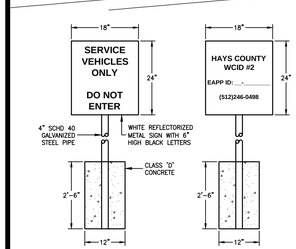
9. Filter area for Sand Filters Designed as Required in RG-348 Pages 3-58 to 3-63

9A. Full Sedimentation and Filtration System

Water Quality Volume for sedimentation basin =	18962	cubic feet	
Minimum filter basin area =	878	square feet	
Maximum sedimentation basin area =	7901	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	1975	square feet	For maximum water depth of 8 feet

9B. Partial Sedimentation and Filtration System

Water Quality Volume for combined basins =	18962	cubic feet	
Minimum filter basin area =	1580	square feet	
Maximum sedimentation basin area =	6321	square feet	For minimum water depth of 2 feet
Minimum sedimentation basin area =	395	square feet	For maximum water depth of 8 feet



ACCESS DETAIL POND SIGN DETAIL

NOTE: SIGN TO REFLECT OWNERSHIP AND CONTACT INFORMATION FOR CRESCENT BELTERRA AT (512) 246–0498 UNTIL AFTER WARRANTY PERIOD AND ACCEPTANCE BY HAYS COUNTY WCID NO. 2.

GEOTEXTILE FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	UNIT	UNIT
MATERIAL	NONWOVEN GEOTEXTILE FABRIC		
UNIT WEIGHT		OZ / SQ YD	8 (MIN)
FILTRATION RATE		IN / SEC	0.08 (MIN)
PUNCTURE STRENGTH	ASTM D–751 (MODIFIED)	LB	125 (MIN)
MULLEN BURST STRENGTH	ASTM D–751	PSI	400 (MIN)
TENSILE STRENGTH	ASTM D–1682	LB	200 (MIN)
EQUIVALENT OPENING SIZE	US STD SIEVE	NO	80 (MIN)

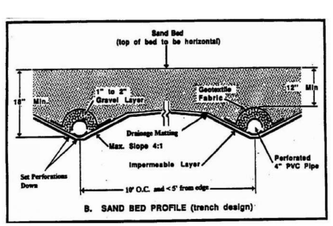


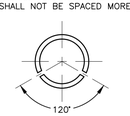
FIGURE 3-23 REF: RG-348 (FILTRATION POND BEDDING DETAIL)

FILTRATION POND 2 - DRAWDOWN CALCUALTIONS

Stage (ft amsl)	Storage (cf)	Head (ft)	Relative Volume (cf)	Time To Drain (hr)	Outflow Velocity (fps)
1124	5303	7	884	6.98	3.54
1123	4420	6	856	7.30	3.28
1122	3564	5	3564	33.30	2.99
1121	0	4	0	0.00	0.00
			Complete Drawdown Time	**47.57**	

*Elevation of Downstream WSE =	1117.00	ft asml
*Orifice Diameter (inches) =	0.70	in
*24-Hour Drawdown Volume =	2780	cf

PERFORATED 6", SCHD 40 PVC PIPE WRAPPED IN GEOTEXTILE FABRIC. PERFORARTIONS SHALL BE 3/8"ø AND SHALL NOT BE SPACED MORE THAN 6" APART.



PIPE PERFORATION DETAIL
NTS

NOTE:
SEE SHEET 35
FOR CROSS SECTIONS

GABION WALL NOTES

1. STONE: STONE FILL MATERIAL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE OF THE SIZE INDICATED. 5 TO 8 INCHES IN SIZE OR AS APPROVED BY THE ENGINEER AND RESISTANT TO THE ACTION OF AIR AND WATER AND SUITABLE IN ALL RESPECTS FOR THE PURPOSE INTENDED.
2. WIRE CONTAINERS: WIRE MESH SHALL CONSIST OF PLASTIC COATED (PVC) GALVANIZED WIRE 0.120 INCH IN DIAMETER MINIMUM AND SHALL EQUAL OR EXCEED FEDERAL SPECIFICATION QQ–W–481g CLASS 3 UNLESS OTHERWISE INDICATED. OPENING OF THE MESH SHALL NOT EXCEED APPROXIMATELY 4 INCHES IN THE LARGEST DIMENSION. THE WIRE MESH IS TO BE FABRICATED IN SUCH A MANNER AS TO BE NONRAVELING. TIE AND CONNECTING WIRE SHALL BE OF THE SAME TYPE AND SIZE AS THE BASKETS AND SHALL BE SUPPLIED IN SUFFICIENT QUANITITY FOR SECURELY FASTENING ALL EDGES OF THE GABION AND DIAPHGRAMS.
3. FILTER FABRIC: FILTER FABRIC SHALL BE NON–BIODEGRADABLE ULTRAVIOLET STABILIZED, INERT TO MOST SOIL CHEMICALS, UNAFFECTED BY MOISURE WHICH ALLOWS WATER TO PASS THROUGH WHILE RETAINING SOIL PARTICLES AND SHALL CONFORM TO ITEM NO. 620, "FILTER FABRIC".

0 10' 20' 40'
SCALE: 1" = 20'

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

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O: 512-904-0505
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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
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469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: January 9, 2017
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15–PC Carlos A. Martinez

BELTERRA SECTION 21-2

POND 2 PLAN VIEW

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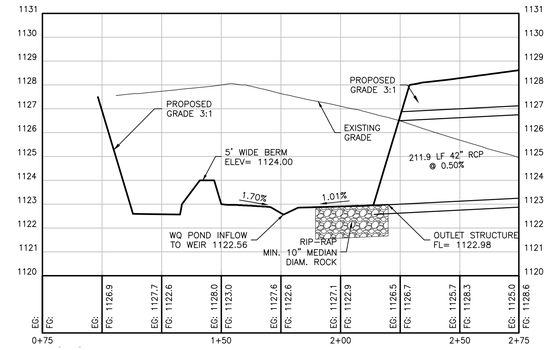
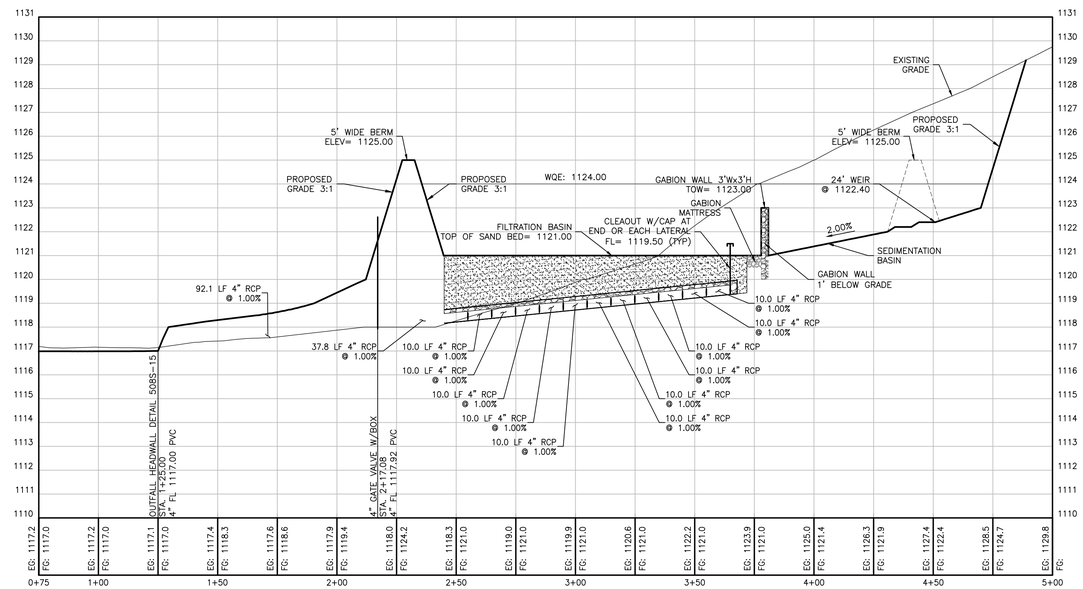


SECTION A2-A2

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



SECTION B2-B2

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

DA - 2

STORM EVENT	TOTAL EXT FLOW (CFS)	TOTAL DEV FLOW (W/O DET. POND) (CFS)
2 YR	41.23	40.27
10 YR	102.85	92.03
25 YR	140.35	122.55
100 YR	203.31	173.22

*NOTE: DETENTION POND NOT REQUIRED

Conveyance from Splitter Channel to Sedimentation Basin (POND 2)

Q25 (cfs)	Weir #	Slope	Length (ft)	Weir Crest Elev. (ft)	n	Manning's Equation
55.35	WQ SED	0.02	5.5	1122.4	0.03	$Q=(1.49/n)AR^{2/3}S^{1/2}$

Elev. (ft)	1122.40	1122.50	1122.60	1122.70	1122.80	1122.90	1123.00	1123.10	1123.20	1123.30	1123.40	1123.50	1123.60	1123.70	1123.80	1123.90	1124.00
Q (cfs)	0.00	0.81	2.52	4.85	7.66	10.89	14.46	18.33	22.46	26.84	31.42	36.18	41.12	46.21	51.45	56.81	62.28

Broad Crested Weir from Splitter Channel to Bypass Channel (POND 2)

Q100 (cfs)	Weir #	Length (ft)	Weir Crest Elev. (ft)	C	Weir Equation
79.6	BYPASS	31.75	1124	3	Q=CL(H)^1.5

Elev. (ft)	1124.00	1124.10	1124.20	1124.30	1124.40	1124.50	1124.60	1124.70	1124.80	1124.90	1125.00
Q (cfs)	0.00	3.01	8.52	15.65	24.10	33.68	44.27	55.78	68.16	81.33	95.25

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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
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CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

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PLOTTED BY: TESCAD15-PC Carlos A. Martinez

BELTERRA SECTION 21-2

POND 2 SECTIONS

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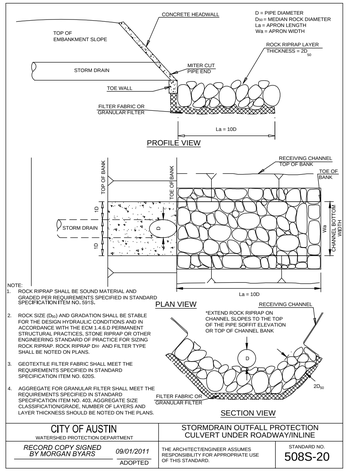
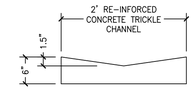


NOTE:

1. ROCK RIPRAP SHALL BE SOUND MATERIAL AND GRADED PER REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 591S.
2. ROCK SIZE (D_{50}) AND GRADATION SHALL BE STABLE FOR THE DESIGN HYDRAULIC CONDITIONS AND IN ACCORDANCE WITH THE CITY OF AUSTIN DRAINAGE STRUCTURAL PRACTICES, STONE RIPRAP OR OTHER ENGINEERING STANDARD OF PRACTICE FOR SIZING ROCK RIPRAP. ROCK RIPRAP D_{50} AND FILTER TYPE SHALL BE NOTED ON PLANS.
3. GEOTEXTILE FILTER FABRIC SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 620S.
4. AGGREGATE FOR GRANULAR FILTER SHALL MEET THE REQUIREMENTS SPECIFIED IN STANDARD SPECIFICATION ITEM NO. 403. AGGREGATE SIZE CLASSIFICATIONS/GRADE, NUMBER OF LAYERS AND LAYER THICKNESS SHOULD BE NOTED ON THE PLANS.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STORMDRAIN OUTFALL PROTECTION CULVERT UNDER ROADWAY/INLINE	
RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-20

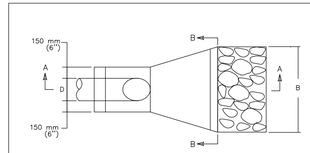


TRICKLE CHANNEL DETAIL

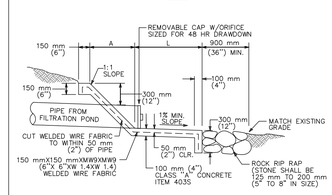
NTS

NOTES:

1. A REINFORCED CONCRETE CHANNEL MUST BE USED IF THE CHANNEL SLOPE IS LESS THAN TWO PERCENT.
2. PILOT CHANNEL MUST BE AT LEAST TWO(2) FEET WIDE, ONE AND HALF(1.5) INCHES DEEP, AND BE CAPABLE OF WITHSTANDING VEHICLULAR LOADING.
3. SIDE SLOPES SHALL BE SMOOTH EARTHEN FREE OF ROCK AND SHALL RECEIVE THE FOLLOWING, 6" OF TOPSOIL, HYDROMULCH AND A SOIL BLANKET, OR AND APPROVED RETENTION ALTERNATIVE.
4. EXPANSION JOINTS SHALL BE CONSTRUCTED EVERY 40'.
5. CONTROL JOINTS SHALL BE CONSTRUCTED AND SPACE EVERY 5'(MIN).

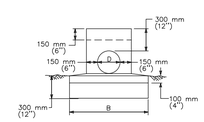


PLAN



SECTION A – A

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	HEADWALL FOR FILTRATION PONDS W/OUTFALL PIPE 150 mm (6") TO 375 mm (15") DIA.	
RECORD COPY SIGNED BY GEORGE E. OSWALD 3/15/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–15 1 OF 2



SECTION B – B

A	450 mm (18")	500 mm (20")	550 mm (22")	600 mm (24")	675 mm (27")
B	750 mm (30")	800 mm (32")	850 mm (34")	1.05 m (42")	1.27 m (51")
D	150 mm (6")	200 mm (8")	250 mm (10")	300 mm (12")	375 mm (15")
L	600 mm (24")	600 mm (24")	750 mm (30")	900 mm (36")	1.2 m (48")

NOTE: FOR D =4" USE 6" SPECIFICATIONS.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	HEADWALL FOR FILTRATION PONDS W/OUTFALL PIPE 150 mm (6") TO 375 mm (15") DIA.	
RECORD COPY SIGNED BY GEORGE E. OSWALD 3/15/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–15 2 OF 2

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

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CONSULTANTS:

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REVISIONS

NO	DATE - DESCRIPTION

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PLOTTED BY: TESCAD15-PC Carlos A. Martinez

BELTERRA SECTION 21-2

POND DETAILS

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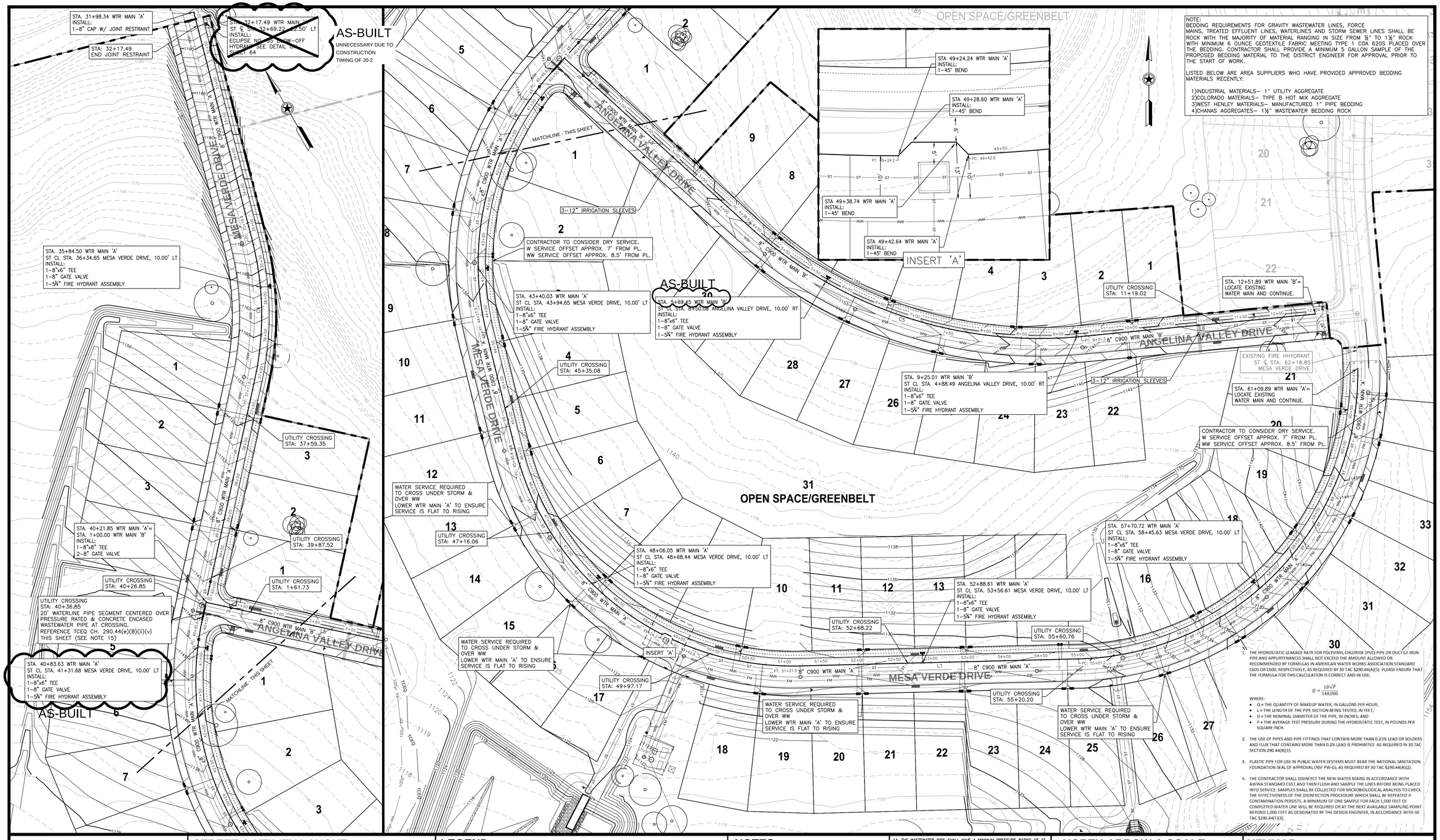


NOTE:
BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ½" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK

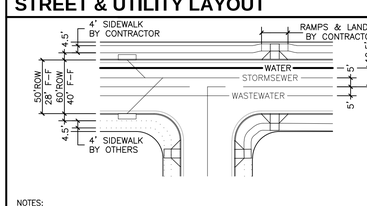
1. THE HYDROSTATIC LEAKAGE RATE FOR POLYVINYL CHLORIDE (PVC) PIPE OR DUCTILE IRON PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICAN WATER WORKS ASSOCIATION STANDARD C605 OR C600, RESPECTIVELY, AS REQUIRED BY 30 TAC §290.44(a)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND IN USE;

$$Q = \frac{LD\sqrt{P}}{148{,}000}$$

WHERE:
- Q = THE QUANTITY OF MAKEUP WATER, IN GALLONS PER HOUR;
- L = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET;
- D = THE NOMINAL DIAMETER OF THE PIPE, IN INCHES; AND
- P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST, IN POUNDS PER SQUARE INCH.

2. THE USE OF PIPES AND PIPE FITTINGS THAT CONTAIN MORE THAN 0.25% LEAD OR SOLDERS AND FLUX THAT CONTAINS MORE THAN 0.2% LEAD IS PROHIBITED AS REQUIRED IN 30 TAC SECTION 290.44(B)(1).
3. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF PW-G), AS REQUIRED BY 30 TAC §290.44(A)(2).
4. THE CONTRACTOR SHALL DISINFECT THE NEW WATER MAINS IN ACCORDANCE WITH AWWA STANDARD C651 AND THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATER LINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER, IN ACCORDANCE WITH 30 TAC §290.44(F)(3).

STREET & UTILITY LAYOUT



NOTES:
1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF CURB. THE TYPICAL CURB RETURN RADIUS (FROM FACE OF CURB) IS 25'. ALL CURB RAMPS AS WELL AS SIDEWALKS SHOWN AS SOLID LINES ARE TO BE CONSTRUCTED BY CONTRACTOR WITH THIS CONTRACT. VALLEY GUTTERS SHALL BE INSTALLED ONLY WHERE CALLED FOR IN THESE PLANS.
2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

750	EXISTING CONTOURS	FM	WW FM LINE AS NOTED
	PHASE BOUNDARY/ROW		WW FM CLEAN OUT
	DOUBLE WATER SERVICE		WW FLOW ARROW
	SINGLE WATER SERVICE	WW	WW MANHOLE AS NOTED
	WTR LN AS NOTED		WW LINE AS NOTED
	AUTOMATIC AIR RELEASE VALVE		DOUBLE WASTEWATER SRVC
	WTR BLOW OFF VALVE		GRINDER PUMP
	FIRE HYDRANT		SINGLE WASTEWATER SRVC
	GATE VALVE AS NOTED	ST	SS LINE AS NOTED
WM	EX. WATER METER	SS	STORM SEWER MANHOLE
			SS BOX CULVERT AS NOTED
T	ELECTRIC TRANSFORMER		SS LATERAL FROM CURB OR AREA INLET
	FITTINGS AS NOTED		

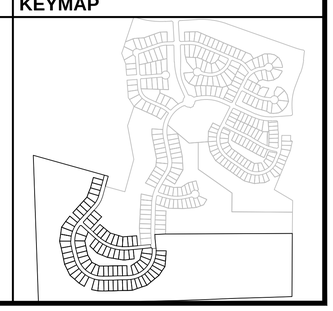
NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
2. BEFORE DIGGING CALL TEXAS 811
3. CAUTION!!! THE DEPTH OF EXISTING UNDERGROUND ELECTRICAL, GAS AND TELECOMM UTILITIES IS UNKNOWN. CONTRACTOR SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY PROVIDERS.
4. FIRE HYDRANTS, VALVES, AND LINE SERVICE LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATION SHALL BE IN ACCORDANCE WITH DETAILS (SEE DETAIL SHEET), AVOIDING INLETS, DRIVEWAYS, AND CURB RAMPS.
5. FOR EACH SEGMENT ONLY TIE–IN TO THE EXISTING WATER SYSTEM SHALL BE ALLOWED UNTIL ALL INSTALLED WATERLINES HAVE PASSED TESTING REQUIREMENTS. TEST RESULTS SHALL BE PROVIDED TO THE DESIGN ENGINEER.
6. GATE VALVES SHALL BE INSTALLED AT P.C. OF CURB RETURNS AT INTERSECTIONS, OR 4' FROM FIRE HYDRANTS AT COMMON INTERSECTIONS.
7. COST OF ALL FITTINGS, INCLUDING THOSE NOT SHOWN, SHALL BE SUBSIDIARY TO THE COST OF THE PIPE.
8. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THE INLET.
9. WATERLINES SHALL BE LAID 48" BELOW FINISHED GRADE IN STREETS WHERE POSSIBLE. AT CROSSINGS, WATERLINES SHALL BE LAID AT THE ELEVATION SHOWN ON THE APPROXIMATE PROFILE. WHERE LESS THE 36" OF COVER FROM FINISHED GRADE IS ACHIEVED, DUCTILE IRON PIPE SHALL BE USED.
10. CONTRACTOR SHALL COORDINATE OPERATION OF ALL VALVES WITH HAYS COUNTY WCID No.2 (PHONE# 244–0855).
11. ALL HORIZONTAL AND VERTICAL PIPE DEFLECTIONS, FITTINGS, VALVES, FIRE HYDRANTS, ETC. SHALL BE SUPPORTED WITH THRUST BLOCKING CONFORMING TO CITY OF AUSTIN SPECIFICATIONS.
12. SERVICES LOCATED AT BACK OF LOT SHALL BE LOCATED IN THE R.O.W. NOT ON PRIVATE PROPERTY.
13. ALL PIPE BEDDING SHALL BE ¾" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACED ON TOP OF GRAVEL (NO SAND)
14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. PER TAC, TCEQ CH. 290.44(E)(B)(ii)&(v)
(B) NEW WATERLINE INSTALLATION – CROSSING LINES.
(iv) WHERE A NEW POTABLE WATERLINE CROSSES A NEW PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
(v) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.
16. DO NOT EXCEED MINIMUM CEMENT STABILIZED SAND(CSS) TO ENSURE TRADITIONAL BEDDING AROUND CSS CONVEY POTENTIAL GROUNDWATER.
17. SECTION 507.5.8 "STORZ" ADAPTERS REQUIRED IS ADDED TO PROVIDE AS FOLLOWS: "STORZ" ADAPTERS REQUIRED. FIRE HYDRANTS SHALL BE PROVIDED WITH APPROPRIATE FIVE (5) INCH "STORZ" TYPE ADAPTERS FOR THE PUMPER (STEAMER) CONNECTION. THIS ADAPTER MUST BE EQUIPPED WITH A BLIND CAP.
18. ALL JOINTS WITHIN THE CALCULATED LENGTH MUST BE RESTRAINED.
A. IF YOUR DISTANCE BETWEEN FITTINGS IS LESS THAN OR EQUAL TO THE CALCULATED RESTRAINT LENGTH, RESTRAIN ALL JOINTS BETWEEN THOSE FITTINGS.
19. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 2/28/06.

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
1/24/18

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

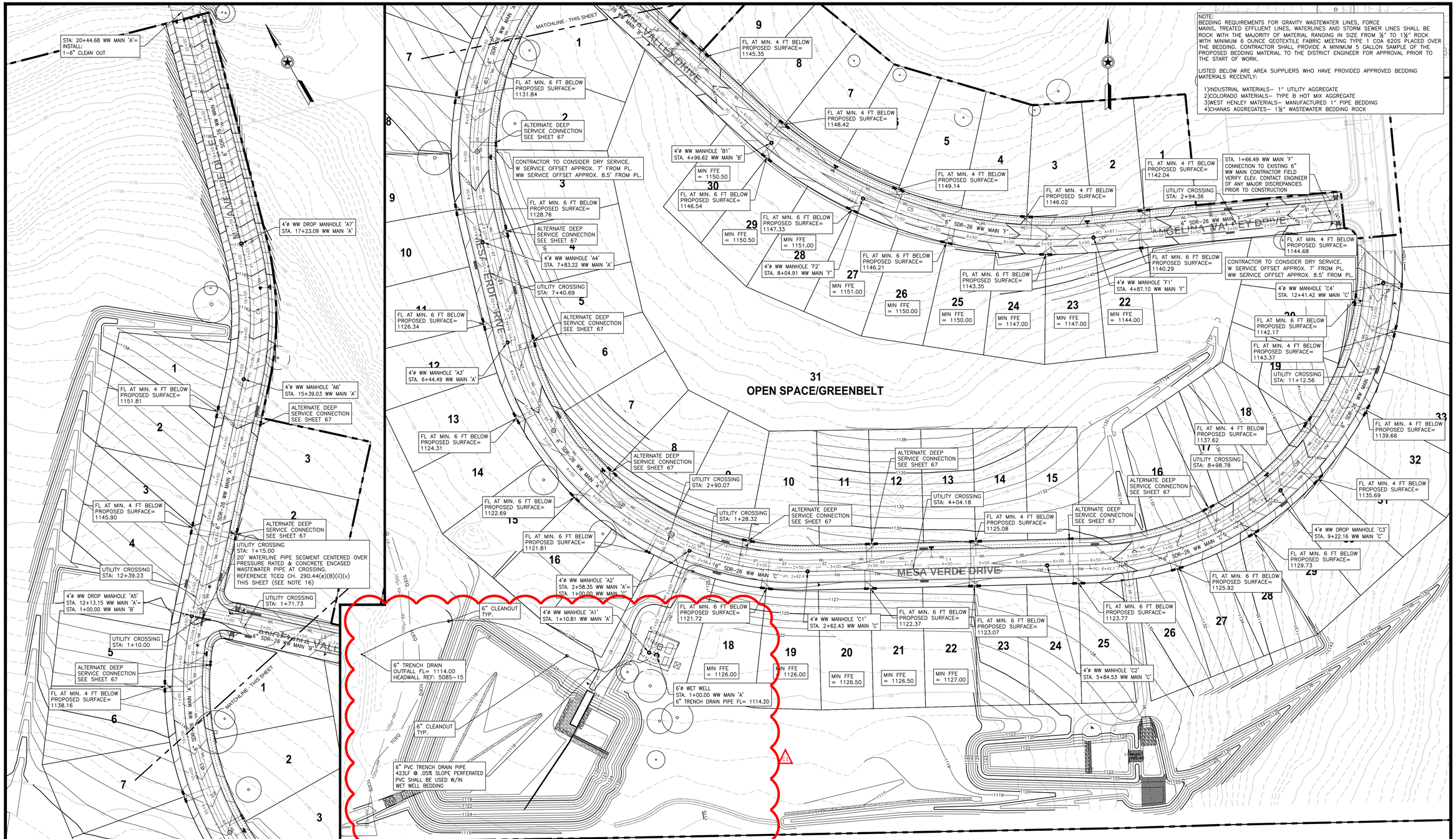
REVISIONS	
NO	DATE - DESCRIPTION

EDITED: August 3, 2015
PLOTTED: January 24, 2018
PLOTTED BY: Conrado Martinez

BELTERRA SECTION 21-2

WATER DISTRIBUTION PLAN

T:\Private\Mesa\Crescent Belterra\Design\PH 2 SEC 21\Utils Construction\S-CRESBELTRA_PH2_SEC21-WTD.dwg

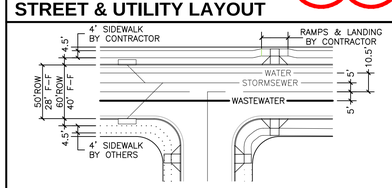


NOTE:
BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ½" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK

STREET & UTILITY LAYOUT



NOTES:
1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM FACE OF CURB. THE TYPICAL CURB RETURN RADIUS (FROM FACE OF CURB) IS 25'. ALL CURB RAMPS AS WELL AS SIDEWALKS SHOWN AS SOLID LINES ARE TO BE CONSTRUCTED BY CONTRACTOR WITH THIS CONTRACT. VALLEY GUTTERS SHALL BE INSTALLED ONLY WHERE CALLED FOR IN THESE PLANS.
2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

- EXISTING CONTOURS
- PHASE BOUNDARY/ROW
- DOUBLE WATER SERVICE
- SINGLE WATER SERVICE
- WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- EX. WATER METER
- ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- SS LINE AS NOTED
- STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
2. BEFORE DIGGING CALL TEXAS 811
3. CAUTION!! THE DEPTH OF EXISTING UNDERGROUND ELECTRICAL, GAS AND TELECOMM UTILITIES IS UNKNOWN. CONTRACTOR SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY PROVIDERS.
4. WASTEWATER MANHOLE LIDS SHALL NOT REFERENCE CITY OF AUSTIN.
5. ALL MANHOLES SHALL BE COATED WITH SEWPERCOAT CEMENTITIOUS PER CITY OF AUSTIN STANDARDS.
6. ALL MANHOLES SHALL BE 4' DIA. UNLESS OTHERWISE SPECIFIED.
7. WHERE SERVICE LOCATIONS CONFLICT WITH INLETS, SERVICES SHALL BE LOCATED 2 FT. FROM OUTSIDE OF THEINLET.
8. SERVICES LOCATED AT BACK OF LOT SHALL BE LOCATED IN THE R.O.W., NOT ON PRIVATE PROPERTY.
9. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
10. ALL PIPE BEDDING SHALL BE ¾" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACED ON TOP OF GRAVEL. (NO SAND)
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12. THE TRENCH AROUND THE MANHOLE SHOULD BE PRE-FILLED IN COMPACTED LAYERS USING THE SAME PROCESS AS ALL UTILITY TRENCHES.
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14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. WW SERVICES MAY BE DEEP SERVICES. SEE DETAIL S520-6 AS NECESSARY.
16. PER TAC, TCEQ CH. 290.44(C)(8)(iv)&(v)
(B) NEW WATERLINE INSTALLATION – CROSSING LINES.
(iv) WHERE A NEW POTABLE WATERLINE CROSSES A NEW PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
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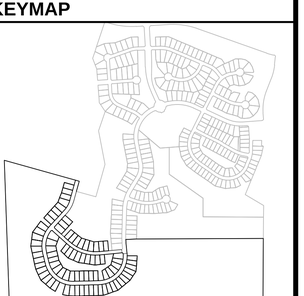
18. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 2/28/05.

NORTH ARROW & SCALE

0 30' 60' 120'
SCALE: 1" = 60'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
2/2/18

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER
LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:
AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION
C1	2018-01-26-UPDATE WASTEWATER TRENCH DRAIN ALIGNMENT

EDITED: August 6, 2015
PLOTTED: February 2, 2018
PLOTTED BY: Conrado Martinez

BELTERRA SECTION 21-2

WASTEWATER COLLECTION PLAN

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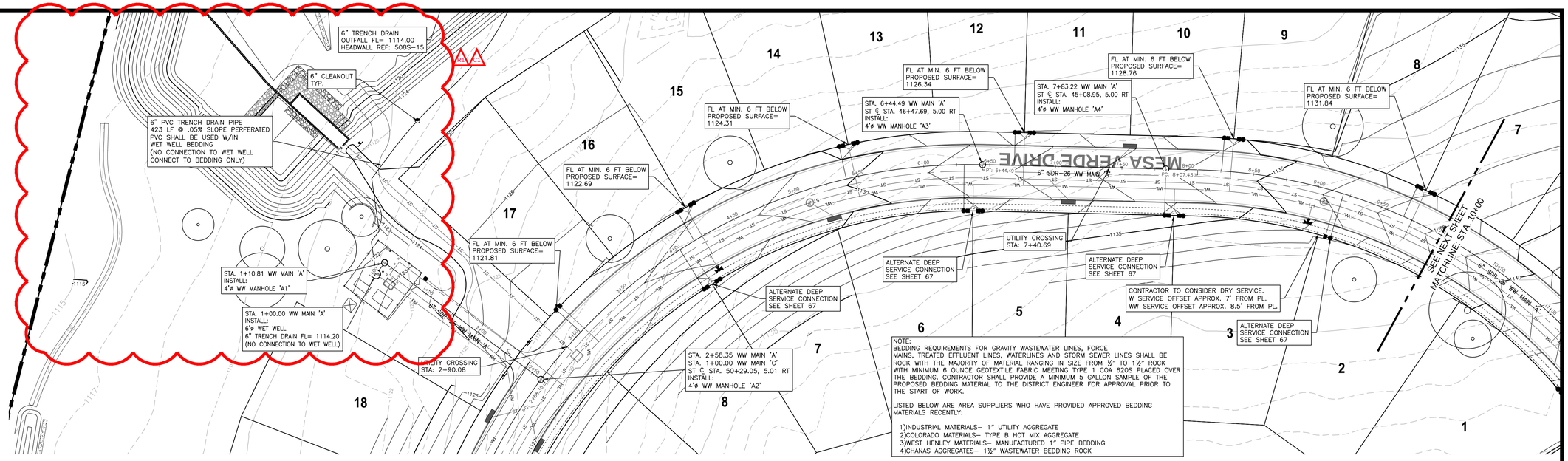
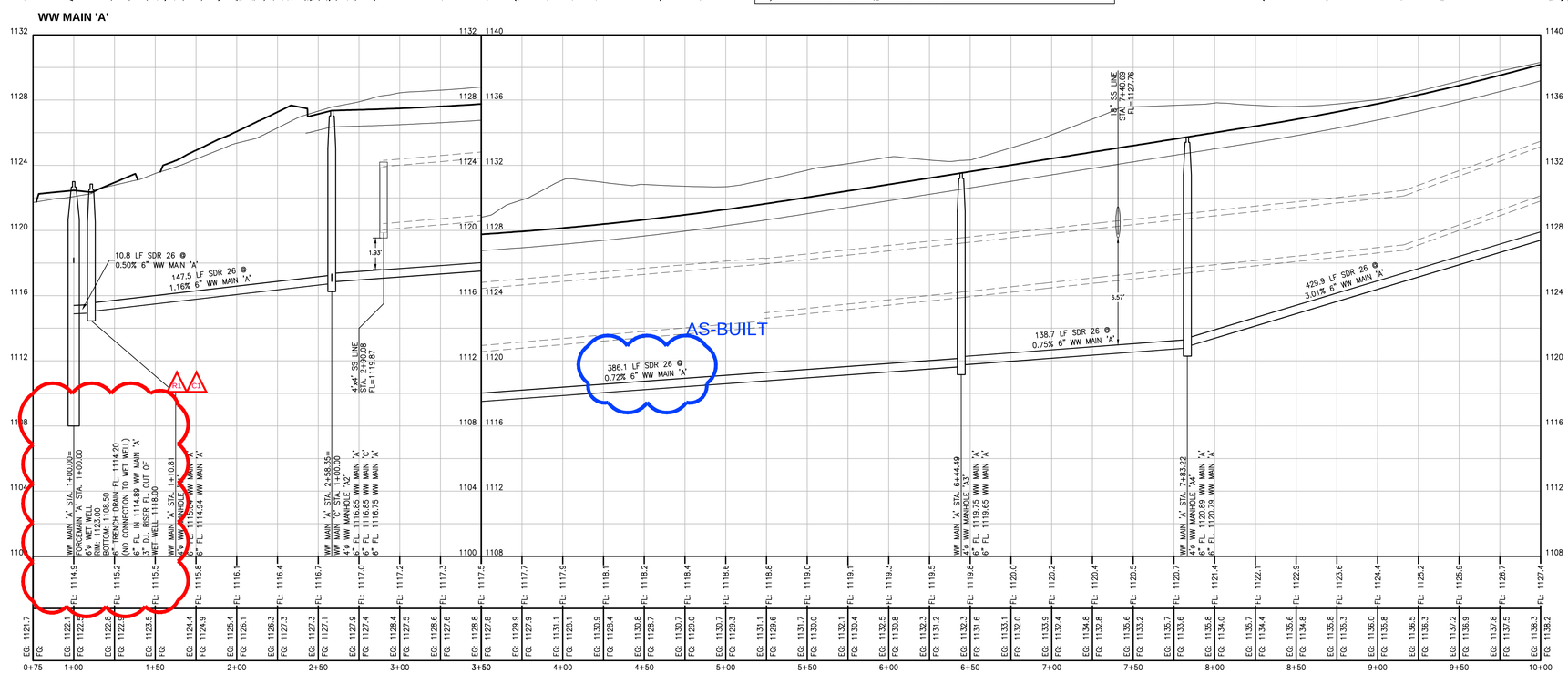
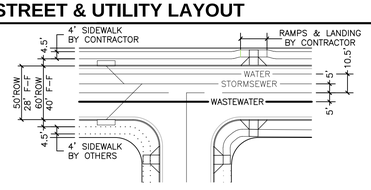




PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE
- FL: 645.5 — FLOW LINE

STREET & UTILITY LAYOUT



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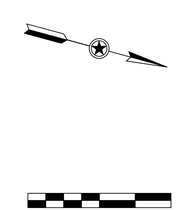
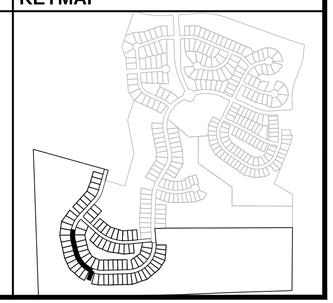


KEYMAP



STATE OF TEXAS
STEPHEN R. BELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
2/2/18

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL: 48209C0140F	

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-12-21-UPDATE WET WELL FLOW LINES
C1	2018-01-26-UPDATE WASTEWATER TRENCH DRAIN ALIGNMENT

EDITED: August 6, 2015
PLOTTED: February 02, 2018
PLOTTED BY: Conrado Martinez

BELTERRA SECTION 21-2

PLAN & PROFILE: WASTEWATER MAIN 'A', STA: 0+50-10+00

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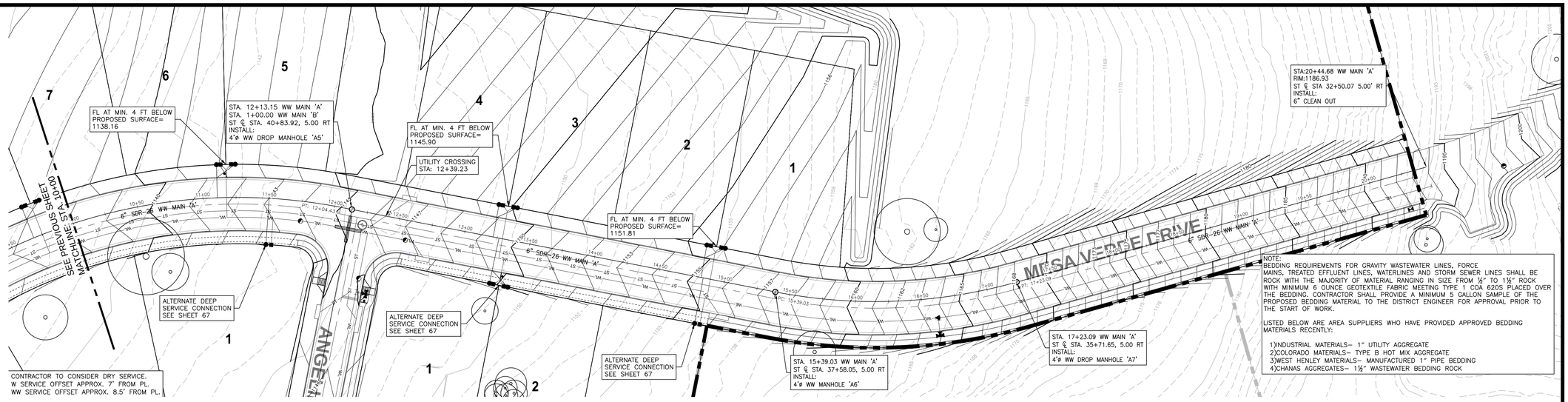
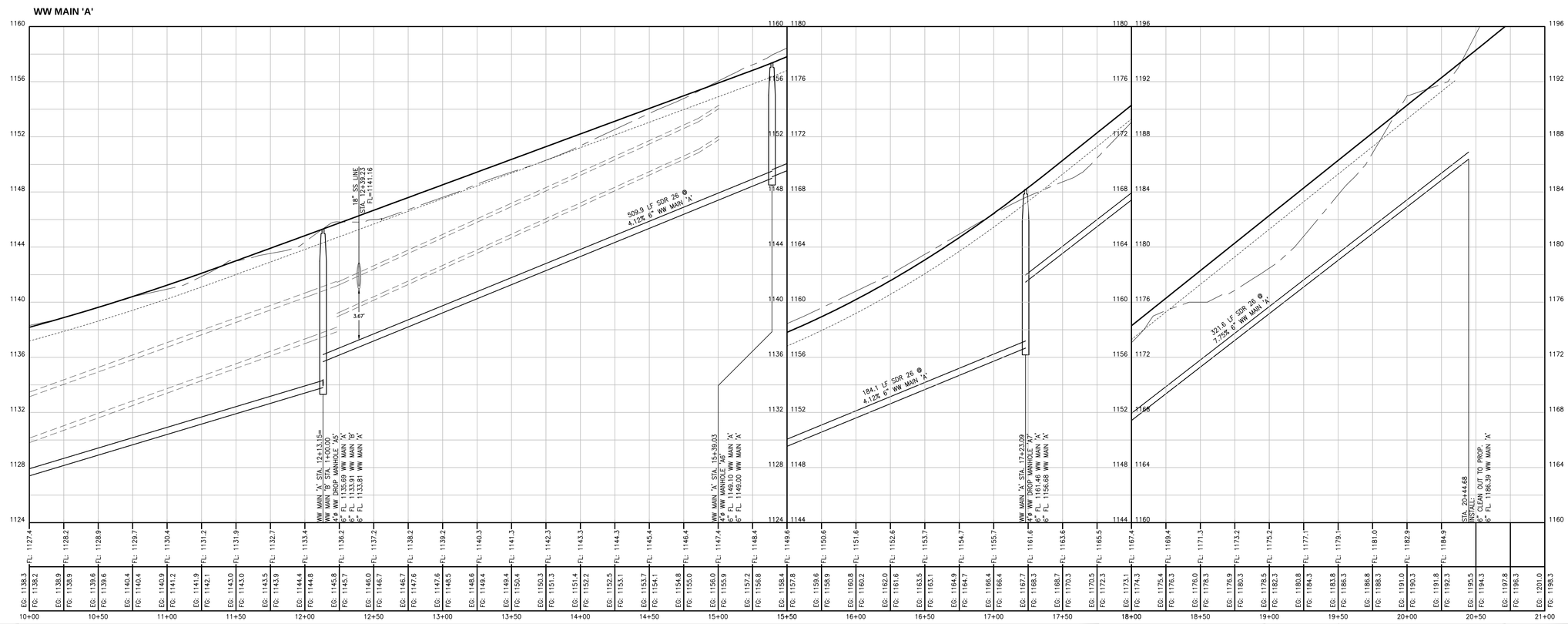


NOTE:
BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ½" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

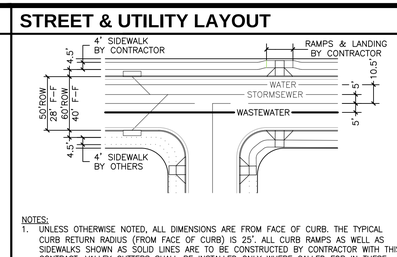
1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK



PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE
- FL: 645.5 — FLOW LINE

STREET & UTILITY LAYOUT



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LEGEND

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- WM — EX. WATER METER
- T — ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- FM — WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW — WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
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- ST — SS LINE AS NOTED
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- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

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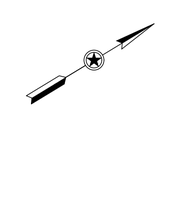
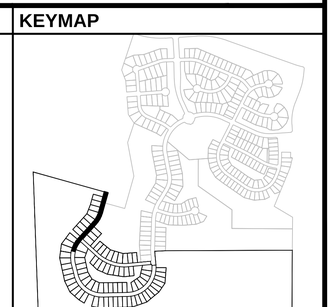
14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (VI) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. WW SERVICES MAY BE DEEP SERVICES. SEE DETAIL S520-6 AS NECESSARY.
16. PER TAC, TCEQ CH. 290.44(E)(8)(iv)&(v)
(B) NEW WATERLINE INSTALLATION – CROSSING LINES.
(iv) WHERE A NEW POTABLE WATERLINE CROSSES A NEW PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
(v) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.
17. DO NOT EXCEED MINIMUM CEMENT STABILIZED SAND(CSS) TO ENSURE TRADITIONAL BEDDING AROUND CSS CONVEY POTENTIAL GROUNDWATER.
18. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 2/28/05.

NORTH ARROW & SCALE



KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

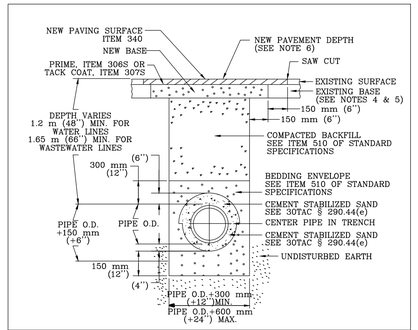
REVISIONS	
NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

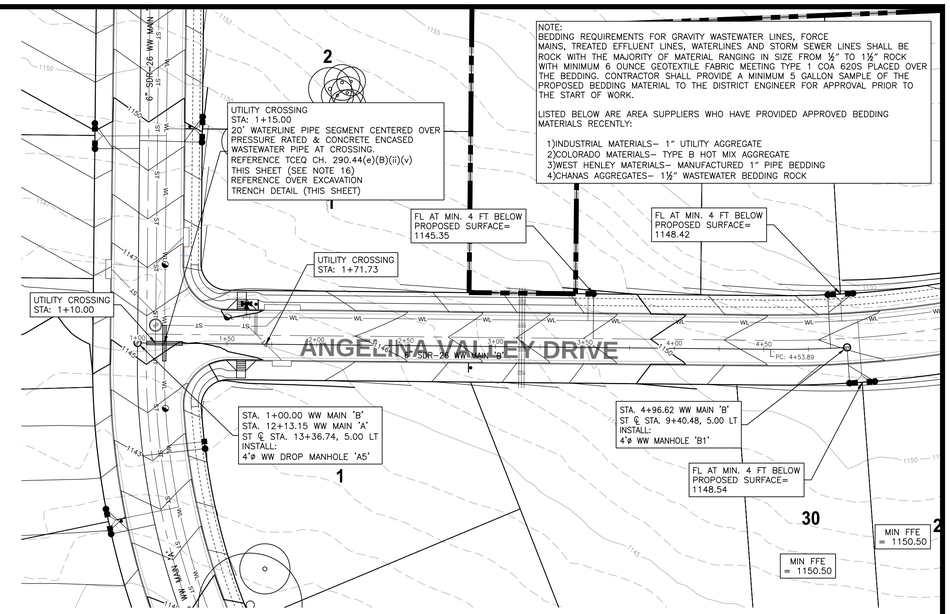
PLAN & PROFILE: WASTEWATER MAIN 'A', STA: 10+50-END

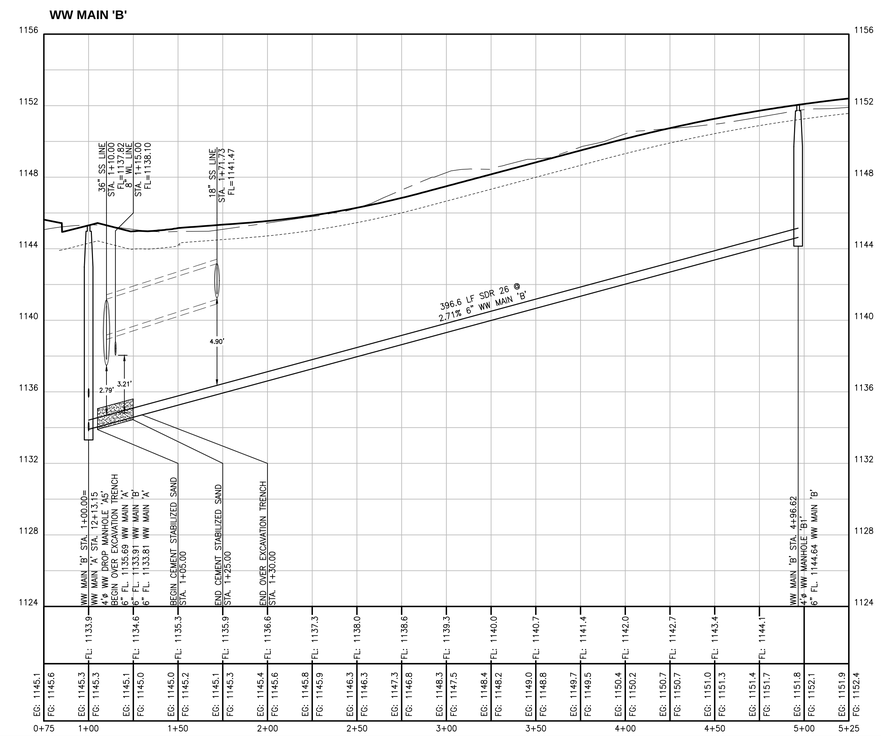
T:\Private\Mesa\Crescent Belterra\Design\Ph 2 SEC 21\Utils Construction\S-DRESBELTRA_PH2_SEC21-WWP.dwg



WATER AND WASTEWATER CROSSING
OVER EXCAVATION TRENCH DETAIL

NOTES:
1. WHEN CEMENT STABILIZED SAND IS USED, THE TRENCH SHALL BE OVER EXCAVATED BY 12 INCHES TO PROVIDE A MINIMUM OF 12 INCHES OF GRAVEL BELOW THE CEMENT STABILIZED SAND TO ALLOW FOR GROUND WATER FLOW THROUGH TRENCHES.
2. OVER EXCAVATION SHALL EXTEND 5 FEET BEYOND THE CEMENT STABILIZED SAND ON BOTH SIDES OF THE PIPE.
3. THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30TAC § 290.44(e).





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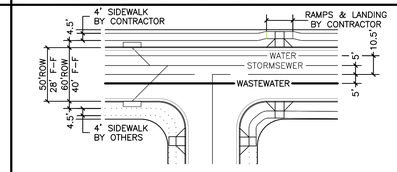

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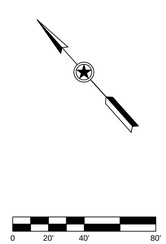

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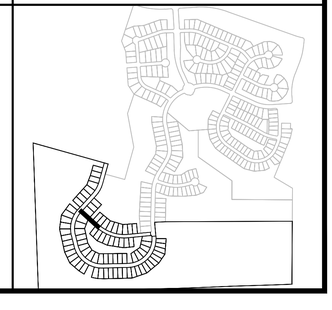


STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

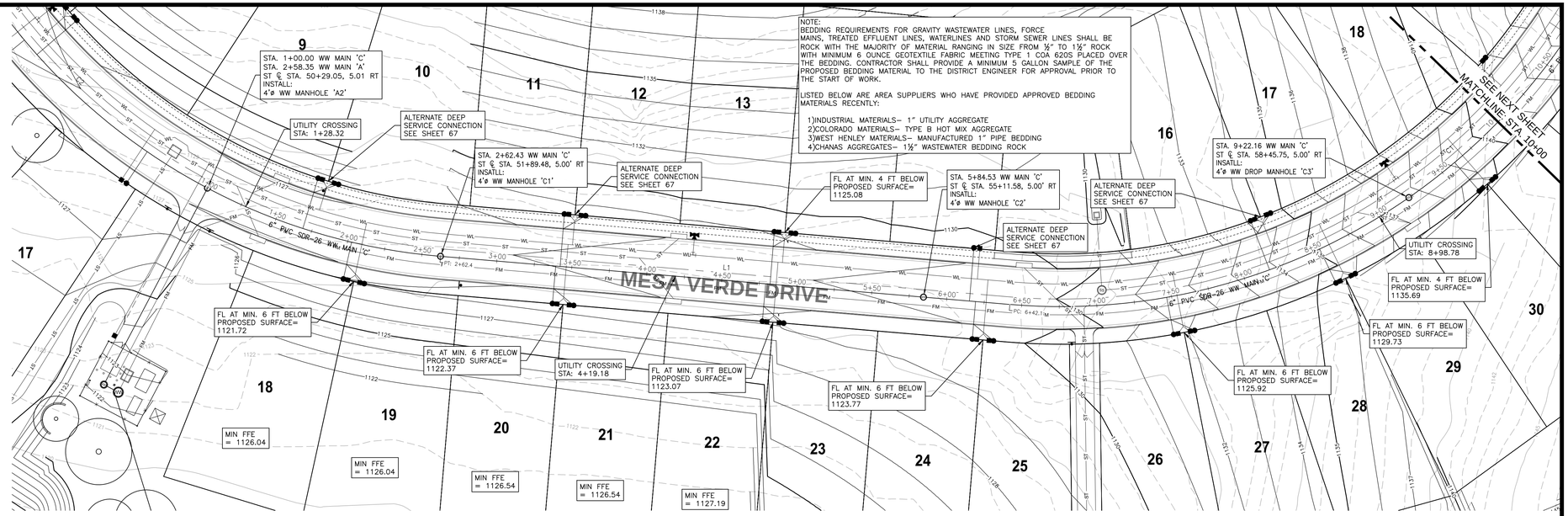
NO	DATE - DESCRIPTION

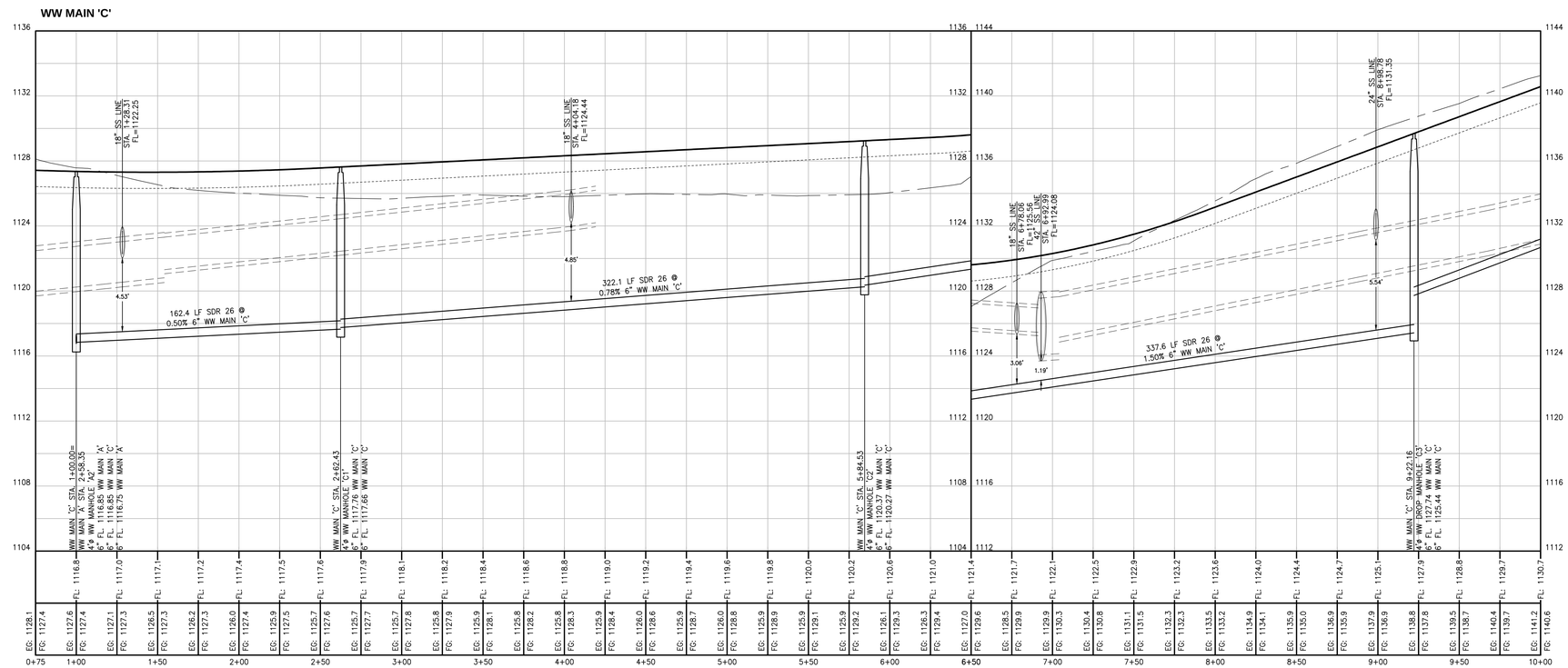
EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: WASTEWATER MAIN 'B', STA: 0+50-END

T:\Private\Mekson\Crescent Beltterra\Design\PH 2 SEC 21\Sht& Construction\S-CRESBELTRA_PH2_SEC21-WWP.dwg





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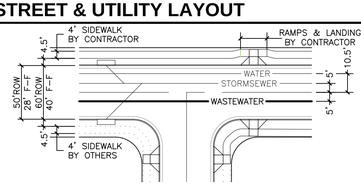

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9. RIM ELEVATIONS SHOWN IN PROFILE ARE APPROXIMATE. MANHOLE RIMS MAY NEED TO BE ADJUSTED FOR STREET CURVATURE AND CROSS SLOPE. CONTRACTOR SHALL VERIFY ALL RIM ELEVATIONS.
10. ALL PIPE BEDDING SHALL BE ¾" CLEAN GRAVEL WITH SILT BARRIER FABRIC PLACED ON TOP OF GRAVEL. (NO SAND)
11. COST OF ALL FITTINGS, INCLUDING THOSE NOT SHOWN, SHALL BE SUBSIDIARY TO THE COST OF THE PIPE.
12. THE TRENCH AROUND THE MANHOLE SHOULD BE PRE–FILLED IN COMPACTED LAYERS USING THE SAME PROCESS AS ALL UTILITY TRENCHES.
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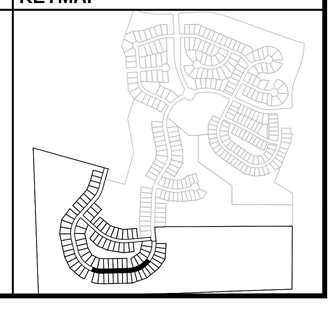
14. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
15. WW SERVICES MAY BE DEEP SERVICES. SEE DETAIL S520–6 AS NECESSARY.
16. PER TAC, TCEQ CH. 290.44(E)(8)(iv)&(v)
(B) NEW WATERLINE INSTALLATION – CROSSING LINES.
(iv) WHERE A NEW POTABLE WATERLINE CROSSES A NEW PRESSURE RATED WASTEWATER MAIN OR LATERAL, ONE SEGMENT OF THE WATERLINE PIPE SHALL BE CENTERED OVER AND SHALL BE PERPENDICULAR TO THE WASTEWATER LINE SUCH THAT THE JOINTS OF THE WATERLINE PIPE ARE EQUIDISTANT AND AT LEAST NINE FEET HORIZONTALLY FROM THE CENTER LINE OF THE WASTEWATER MAIN OR LATERAL. THE POTABLE WATERLINE SHALL BE AT LEAST SIX INCHES ABOVE THE WASTEWATER MAIN OR LATERAL. WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTEWATER MAIN OR LATERAL. THE WASTEWATER PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. THE WASTEWATER MAIN OR LATERAL SHALL BE EMBEDDED IN CEMENT STABILIZED SAND (SEE CLAUSE (V) OF THIS SUBPARAGRAPH) FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
(v) WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE, BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE WASTEWATER MAIN OR LATERAL. THE USE OF BROWN COLORING IN CEMENT STABILIZED SAND FOR WASTEWATER MAIN OR LATERAL BEDDING IS RECOMMENDED FOR THE IDENTIFICATION OF PRESSURE RATED WASTEWATER MAINS DURING FUTURE CONSTRUCTION.
17. DO NOT EXCEED MINIMUM CEMENT STABILIZED SAND(CSS) TO ENSURE TRADITIONAL BEDDING AROUND CSS CONVEY POTENTIAL GROUNDWATER.
18. CONTRACTOR SHALL USE COA STANDARD DETAIL FOR WATER AND WASTEWATER SERVICES DATED 2/28/05.

NORTH ARROW & SCALE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: July 6, 2016
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

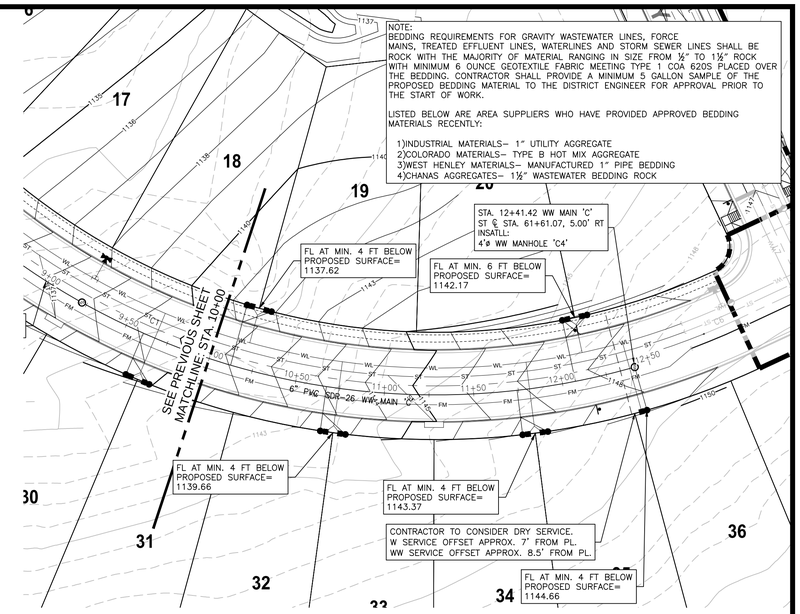
PLAN & PROFILE: WASTEWATER MAIN 'C', STA: 0+50-10+00

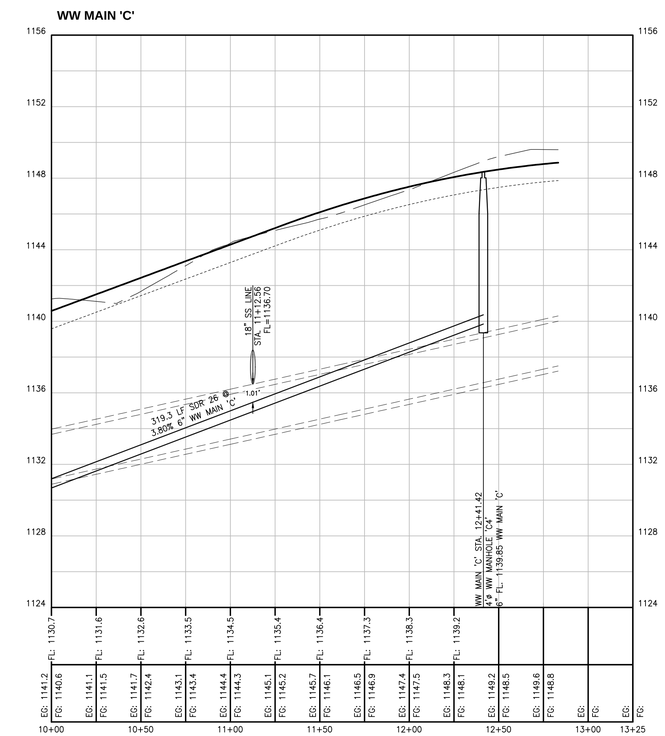
T:\Private\Maxor\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-WWP-MAIN 'C'.dwg

NOTE:
BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCE MAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ½" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK





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8/22/17

Texas Engineering Solutions

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F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

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CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

EDITED: July 6, 2016
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

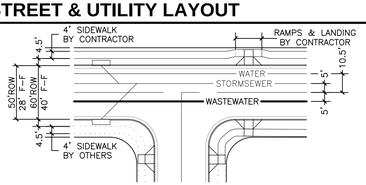
BELTERRA SECTION 21-2

PLAN & PROFILE: WASTEWATER MAIN 'C', STA: 10+00-END

PROFILE LEGEND

- EX GRADE AT CENTERLINE
- FINISHED GRADE AT CENTERLINE
- BASE GRADE BELOW CROWN
- EG: 686.3 — EXISTING GRADE ELEVATION AT STREET CENTER LINE
- FG: 685.5 — FINISHED GRADE ELEVATION AT STREET CENTER LINE
- FL: 645.5 — FLOW LINE

STREET & UTILITY LAYOUT



NOTES:
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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

- 750 — EXISTING CONTOURS
- PHASE BOUNDARY/ROW
- DOUBLE WATER SERVICE
- SINGLE WATER SERVICE
- WL — WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- WM — EX. WATER METER
- T — ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- FM — WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW — WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- ST — SS LINE AS NOTED
- SS — STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS MAY NOT BE PRECISELY ACCURATE. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION. AT HIS EXPENSE, THE CONTRACTOR SHALL REPAIR OR REPLACE, TO ORIGINAL OR BETTER CONDITION, ANY EXISTING UTILITIES OR OTHER INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
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3. CAUTION!!! THE DEPTH OF EXISTING UNDERGROUND ELECTRICAL, GAS AND TELECOMM UTILITIES IS UNKNOWN. CONTRACTOR SHALL COORDINATE WORK WITH THE APPROPRIATE UTILITY PROVIDERS.
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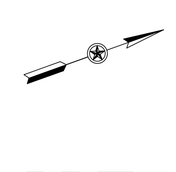
NORTH ARROW & SCALE



HORIZONTAL SCALE: 1" = 40'
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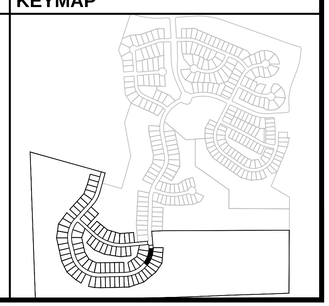
KEYMAP



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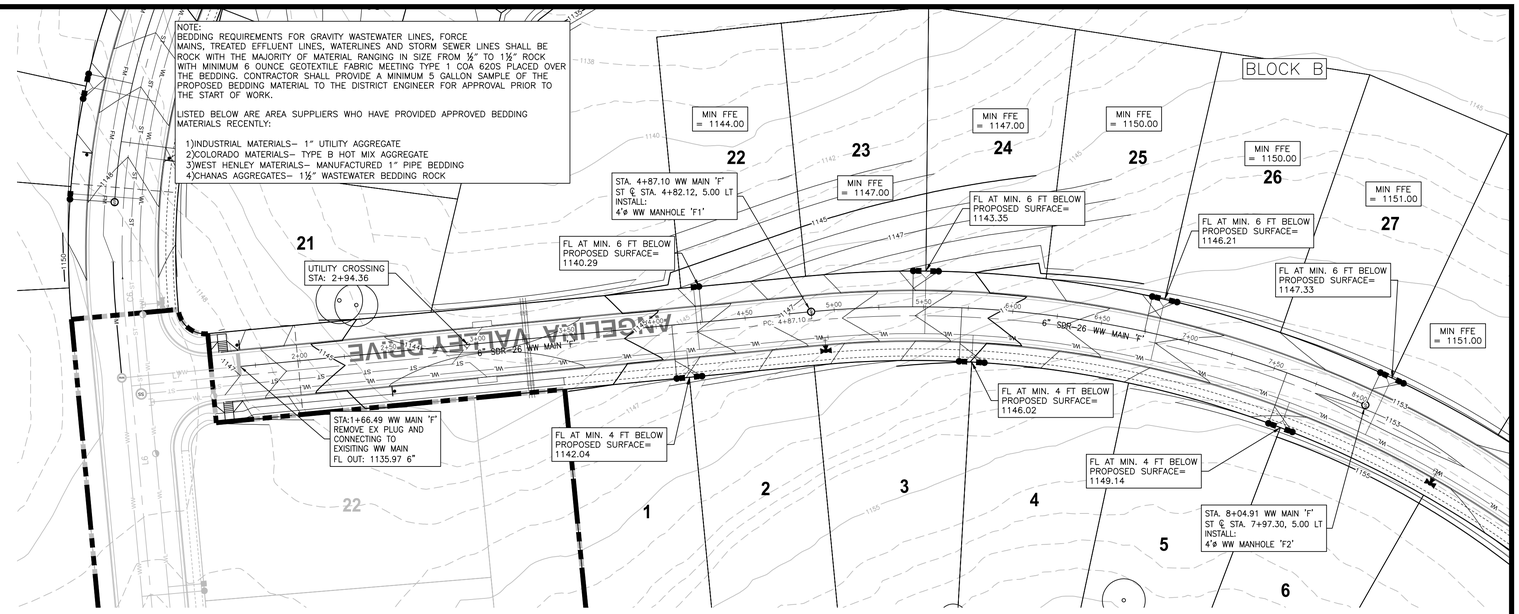

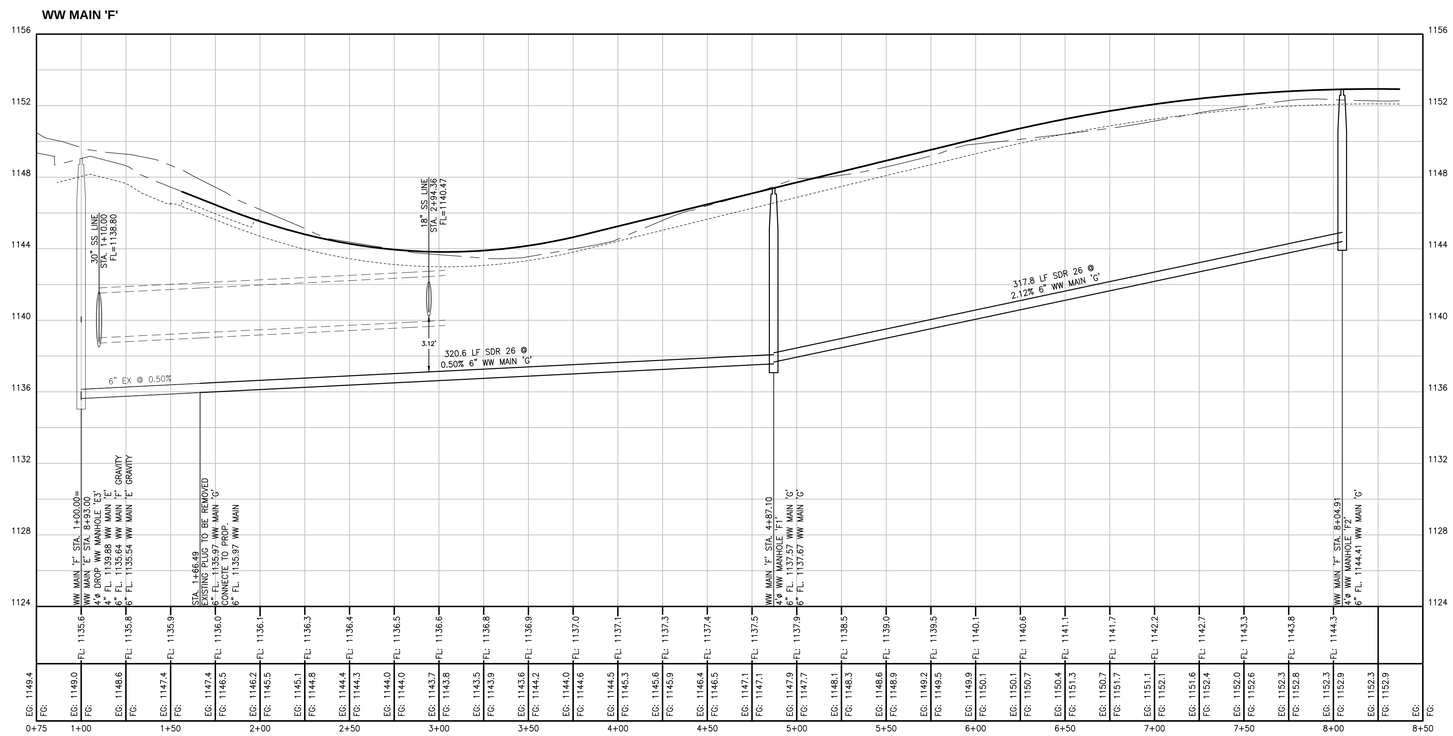

PROFILE LEGEND

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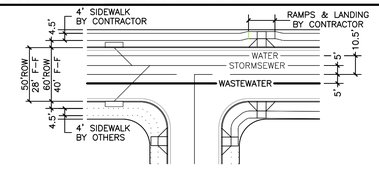

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NORTH ARROW & SCALE

0 20 40' 80'
SCALE: 1" = 40'

KEYMAP

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

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3815 S. Capital of Texas Hwy, Suite 300
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PROJECT DATA

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CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

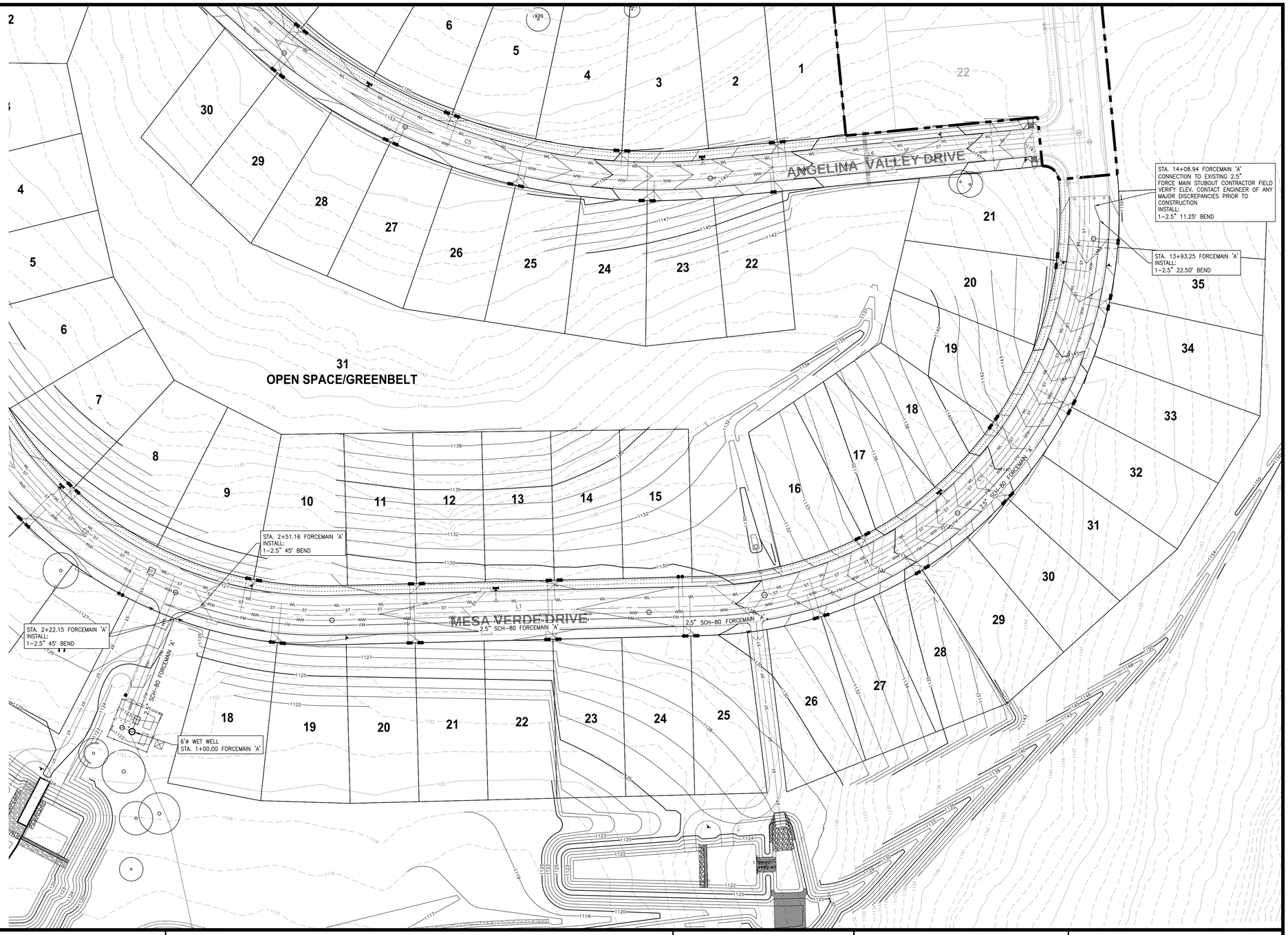
NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

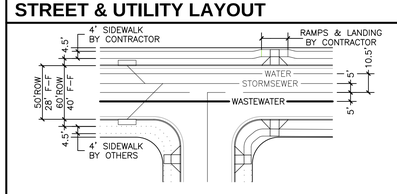
BELTERRA SECTION 21-2

PLAN & PROFILE: WASTEWATER MAIN 'F', STA: 0+50-END

T:\Private\Vaksar\Crescent Belterra\Design\PH 2 SEC 21\Civil Construction\S-CRESBELTRA_PH2_SEC21-WWP.dwg



STREET & UTILITY LAYOUT



NOTES:

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2. WW ALIGNMENT VARIES THROUGH STREET CURVES.
3. SECTIONS ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.

LEGEND

- EXISTING CONTOURS
- PHASE BOUNDARY/ROW
- DOUBLE WATER SERVICE
- SINGLE WATER SERVICE
- WTR LN AS NOTED
- AUTOMATIC AIR RELEASE VALVE
- WTR BLOW OFF VALVE
- FIRE HYDRANT
- GATE VALVE AS NOTED
- EX. WATER METER
- ELECTRIC TRANSFORMER
- FITTINGS AS NOTED
- WW FM LINE AS NOTED
- WW FM CLEAN OUT
- WW FLOW ARROW
- WW MANHOLE AS NOTED
- WW LINE AS NOTED
- DOUBLE WASTEWATER SRVC
- GRINDER PUMP
- SINGLE WASTEWATER SRVC
- SS LINE AS NOTED
- STORM SEWER MANHOLE
- SS BOX CULVERT AS NOTED
- SS LATERAL FROM CURB OR AREA INLET

NOTES

1. WARNING:
CONTRACTOR TO VERIFY ALL EXISTING UTILITIES VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

2. BEFORE DIGGING CALL TEXAS 811

3. BEDDING REQUIREMENTS FOR GRAVITY WASTEWATER LINES, FORCEMAINS, TREATED EFFLUENT LINES, WATERLINES AND STORM SEWER LINES SHALL BE ROCK WITH THE MAJORITY OF MATERIAL RANGING IN SIZE FROM ½" TO 1½" ROCK WITH MINIMUM 6 OUNCE GEOTEXTILE FABRIC MEETING TYPE 1 COA 620S PLACED OVER THE BEDDING. CONTRACTOR SHALL PROVIDE A MINIMUM 5 GALLON SAMPLE OF THE PROPOSED BEDDING MATERIAL TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK.

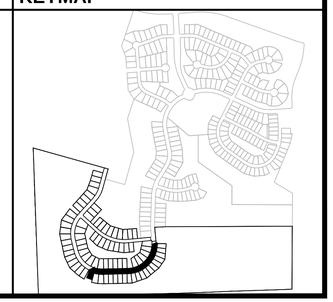
LISTED BELOW ARE AREA SUPPLIERS WHO HAVE PROVIDED APPROVED BEDDING MATERIALS RECENTLY:

1)INDUSTRIAL MATERIALS– 1" UTILITY AGGREGATE
2)COLORADO MATERIALS– TYPE B HOT MIX AGGREGATE
3)WEST HENLEY MATERIALS– MANUFACTURED 1" PIPE BEDDING
4)CHANAS AGGREGATES– 1½" WASTEWATER BEDDING ROCK

NORTH ARROW & SCALE

0 50' 100' 200'
SCALE: 1" = 100'

KEYMAP



STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

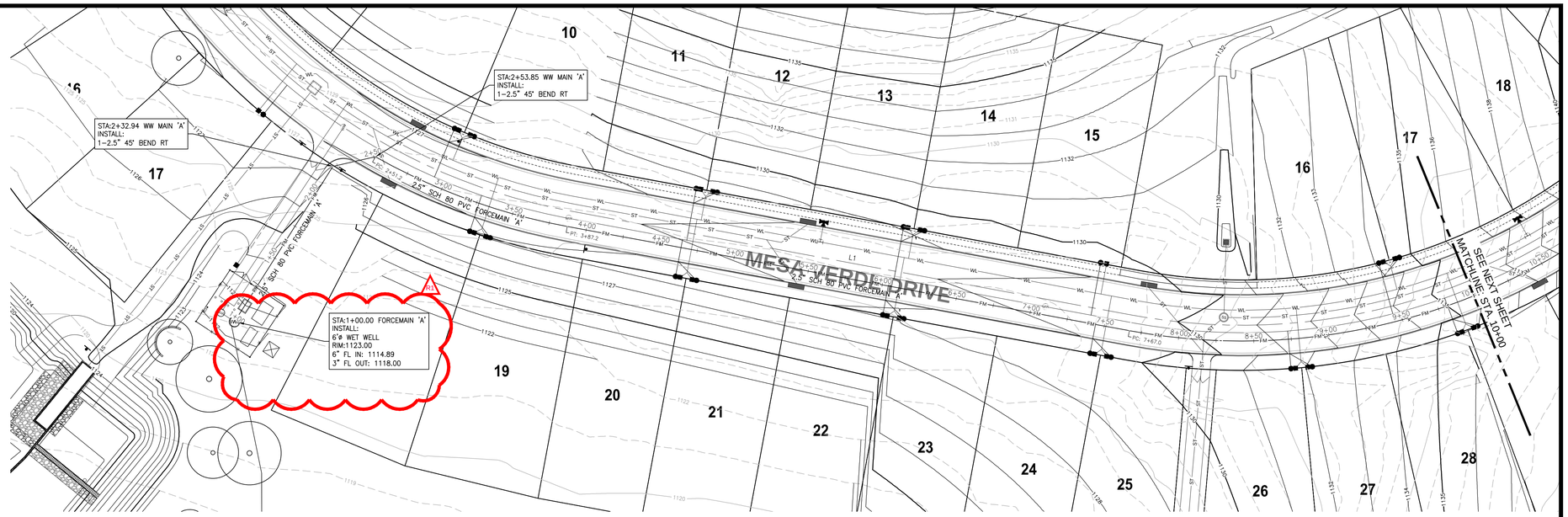
NO	DATE - DESCRIPTION

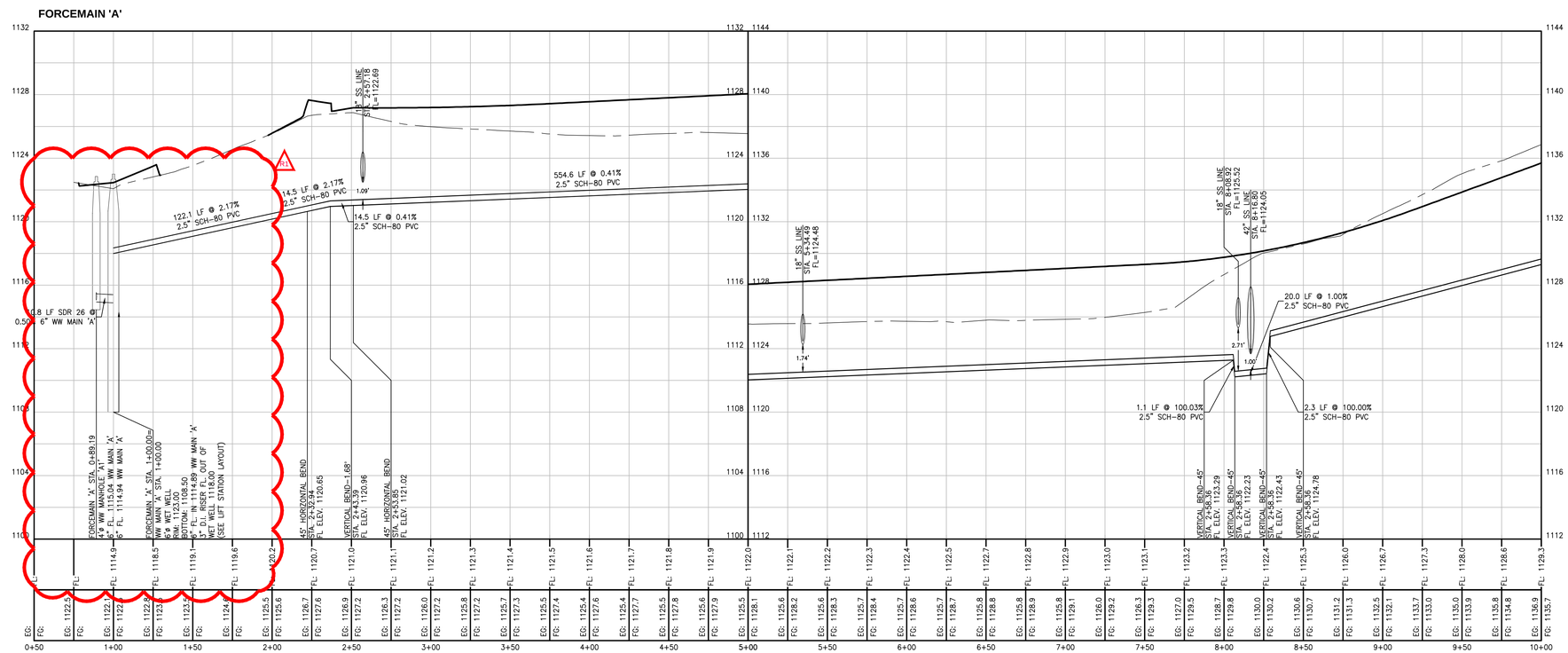
EDITED: July 19, 2016
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15-PC Carlos A. Martinez

BELTERRA SECTION 21-2

FORCE MAIN PLAN

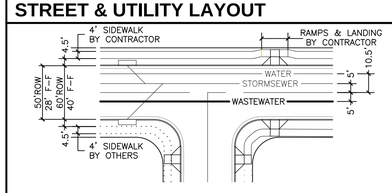
T:\Private\Maxor\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-FM0.dwg





NOTE: FORCE MAIN SEPARATION AT CROSSING UTILITY SHALL BE NO LESS THAN 1 FOOT.

STREET & UTILITY LAYOUT



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16. PER TAC, TCEQ CH. 290.44(C)(B)(iv)&(v)
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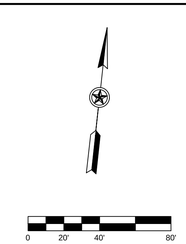
NORTH ARROW & SCALE



HORIZONTAL SCALE: 1" = 40'
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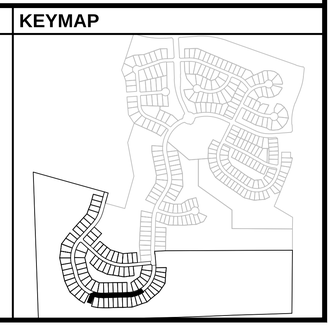
KEYMAP



STATE OF TEXAS
JUDY ANDERSON
120202
LICENSED
PROFESSIONAL ENGINEER
12/21/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION
R1	2017-12-21-UPDATE WET WELL FLOW LINES

EDITED: June 28, 2016
PLOTTED: December 21, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

PLAN & PROFILE: FORCE MAIN, STA: 0+50-10+00

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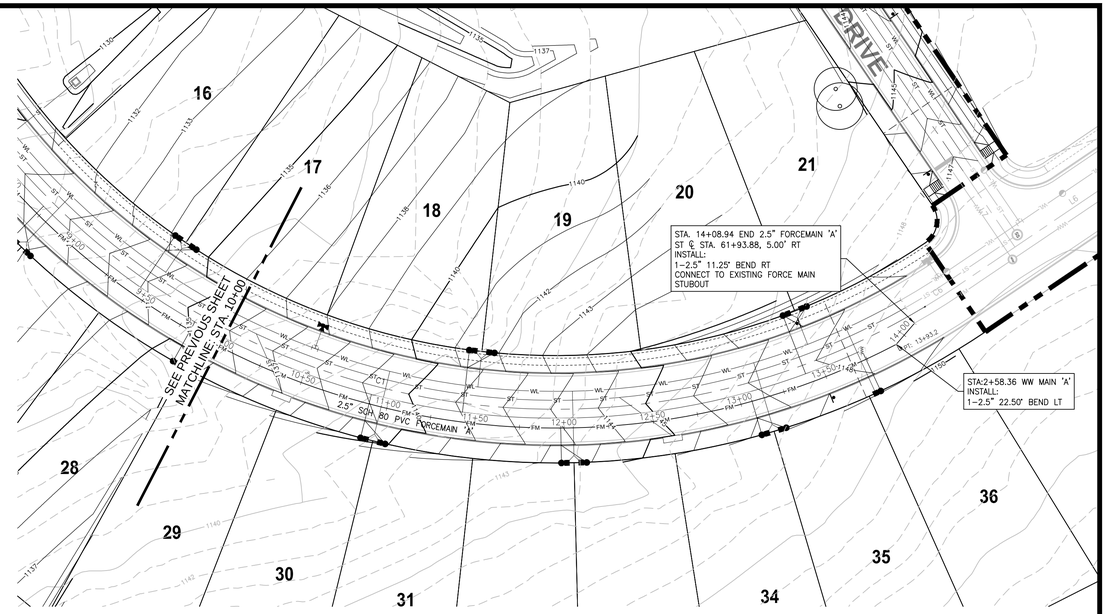

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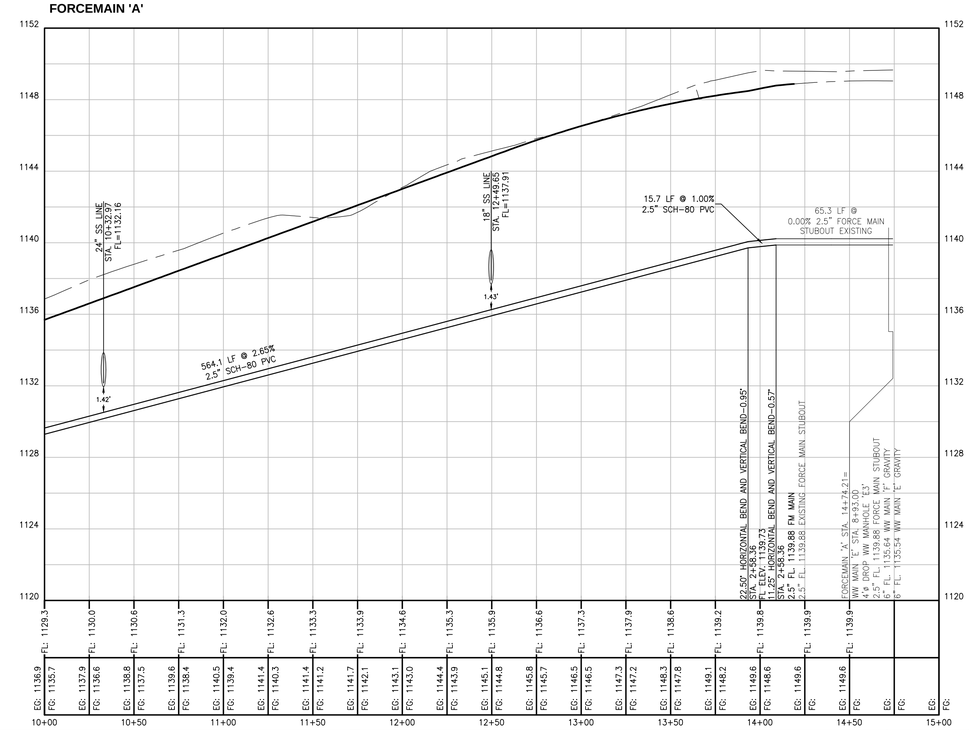
FORCEMAIN 'A'



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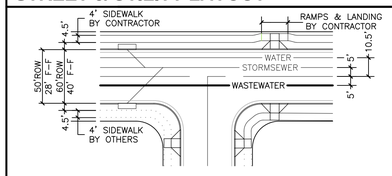

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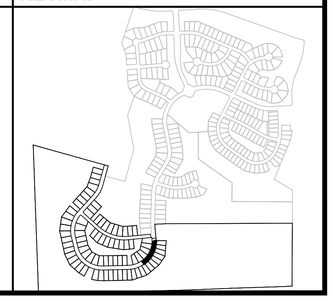
KEYMAP



PLAN & PROFILE:
FORCE MAIN,
STA: 10+00-END

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA	
COUNTY:	
CITY LIMITS/ETJ:	
FINAL PLAT NUMBER:	
RELATED CASES:	
PROJECT ADDRESS:	
GRID NUMBER:	
ZONING:	
FEMA MAP PANEL:	

OWNER / DEVELOPER

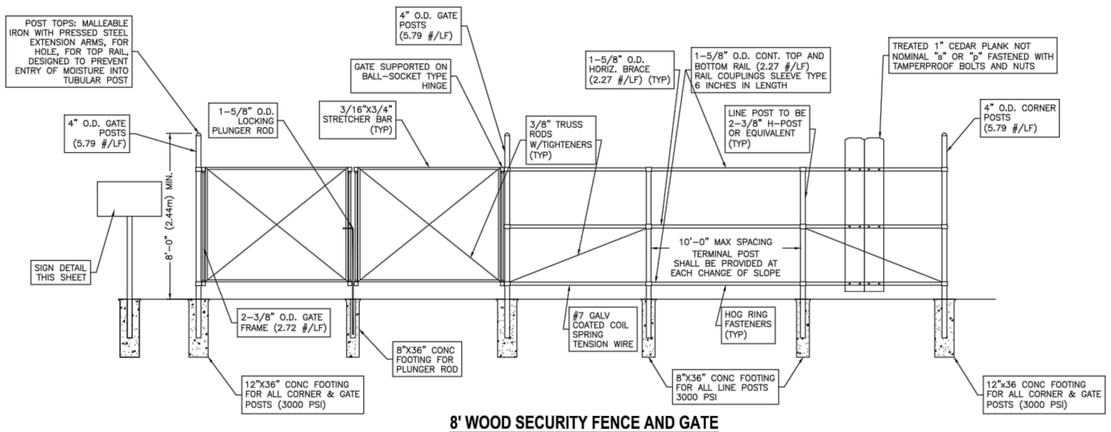
CONSULTANTS:

REVISIONS

NO	DATE - DESCRIPTION

EDITED: June 28, 2016
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15-PC_Cordes
A. Hernandez

T:\Private\Mekam\Crescent Bellerena\Design\PH 2 SEC 21\Civil Construction\S-CRESBELTRA_PH2_SEC21-FM.dwg

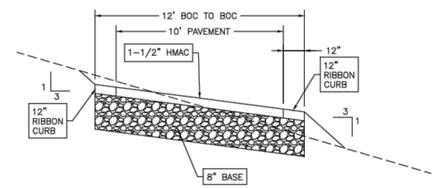


8' WOOD SECURITY FENCE AND GATE DETAIL

NTS

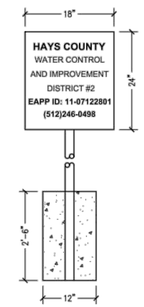
GENERAL NOTES:

1. THE GATE SHALL COME COMPLETE WITH TAMPER PROOF FRAMES, HINGES, BRACED, AND PADLOCKABLE. THE HINGES SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATE SHALL BE INSTALLED SO THAT IT MAY NOT BE REMOVED WITHOUT DISASSEMBLING THE HARDWARE. THE HARDWARE ATTACHMENT BOLTS SHALL BE PEENED SO THAT REMOVAL WILL BE IMPEDED.
2. MOWING STRIP SHALL BE FORMED FROM DOMESTIC PORTLAND CEMENT WITH REGULAR AGGREGATE. IT SHALL BE EIGHTEEN (18) INCHES (457mm) WIDE AND A MINIMUM OF FOUR (4) INCHES (102mm) THICK WITH TWO (2) INCHES (50mm) ABOVE GROUND LEVEL. TWO (2) ROWS OF NUMBER THREE (3) BARS OF STEEL SHALL BE EVENLY SPACED ALONG THE FULL LENGTH OF THE MOW STRIP, AND A NUMBER THREE (3) BAR OF STEEL SHALL BE CROSS-TIED EVERY FOUR (4) FEET (1.2m). EXPANSION JOINTS SHALL BE INSTALLED EVERY TWENTY (20) FEET (6m). FENCE POSTS SHALL BE INSTALLED IN CENTER OF MOW STRIP.
3. ALL POST SHALL BE SET PLUMB AND SPACED AT MAXIMUM OF TEN (10) FEET APART. THE FENCE SHALL BE INSTALLED TO MAINTAIN NOT MORE THAN TWO (2) INCHES (50mm) OF CLEARANCE FROM FINISHED GRADE.
4. CENTER POST SHALL BE BRACED IN BOTH DIRECTIONS.
5. FENCE HARDWARE TO BE RUSTPROOF AND TAMPERPROOF.
6. CEDAR PLANKS SHALL BE 1 INCH THICK X 8 FEET TALL AND STAINED.

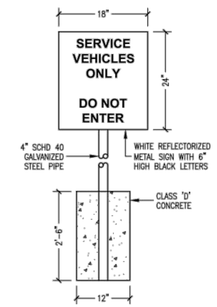


12' ACCESS ROAD DETAIL

NTS



SIGN DETAIL



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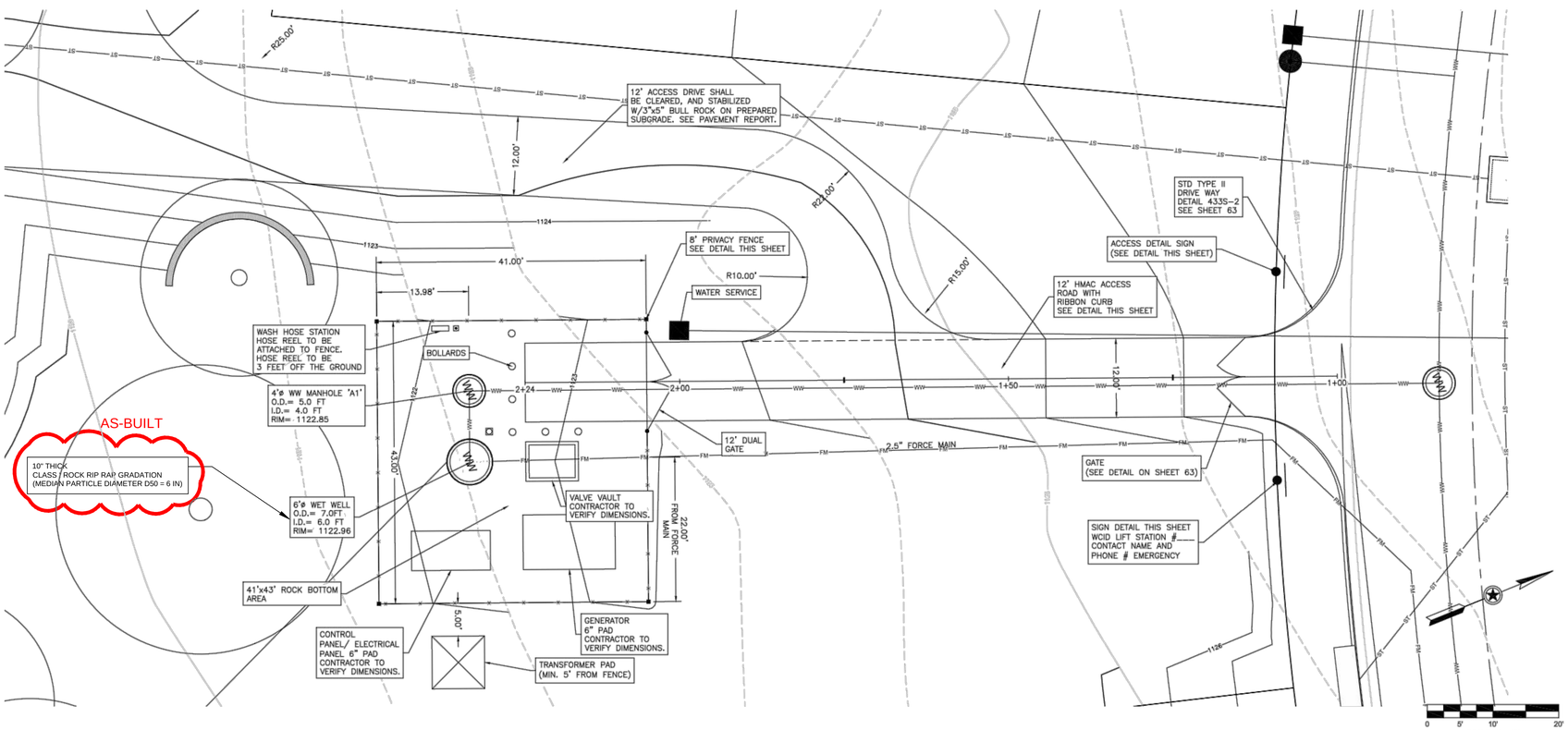

NOTES

GENERAL NOTES:

1. ALL ISOLATION VALVES SHALL BE RESILIENT WEDGE GATE VALVES.
2. ALL CHECK VALVES TO BE LEVER AND WEIGHT SWING CHECK VALVES WITH EXTERNAL ARM.
3. ALL RESTRAINED FLEXIBLE JOINTS SHALL USE MJ SSB DUCTILE IRON CLASS 350 FITTINGS WITH UNIFLANGE 1400 SERIES RESTRAINTS. ALL UNRESTRAINED FLEXIBLE JOINTS SHALL USE SMITH BLAIR TYPE 441.
4. THE PUMP CONTROL PANEL SHALL BE MANUFACTURED BY DUDLEY AND SHALL BE PLACED SLIGHTLY OFF-CENTER OF THE WET WELL, ON THE HINGED SIDE OF THE WET WELL OPENING.
5. PULL BOXES ARE TO BE MOUNTED ON TOP OF THE WET WELL. THE WET WELL VENT IS TO BE PLACED ADJACENT TO THE PULL BOX, AND BOTH THE PULL BOX AND THE VENT SHALL BE LOCATED OPPOSITE THE VALVE VAULT.
6. WET WELL DOOR HINGES SHALL BE PLACED ON THE SAME SIDE AS THE CONTROL PANEL SO THAT THE DOOR OPENS TOWARD THE CONTROL PANEL. THE VALVE VAULT DOOR SHALL OPEN TOWARDS THE WET WELL.
7. AN ANTIFREEZE AND BFD HOSE BIB SHALL BE INSTALLED INSIDE THE FENCED AREA.
8. THE WATER LINE SERVING THE LIFT STATION SHALL HAVE AN RPZ-ABOVE GROUND IN AN INSULATED ENCLOSURE (HOT BOX OR EQUAL.)
9. NO 90 DEGREE BENDS SHALL BE INSTALLED ON THE FORCE MAIN.
10. THERE SHALL NOT BE ANY TRANSFORMER, GENERATOR PAD, CONTROL PAD, OR ANY OTHER STRUCTURE INSTALLED WITHIN 5 FEET OF THE FORCE MAIN.
11. SUBSURFACE DRAINAGE ENTERING THE WET WELL THROUGH PIPE TRENCHES SHALL BE ADDRESSED. CONCRETE RETARDS PLACEDON THE PIPE OR A FRENCH DRAIN SYSTEM MAY BE USED.
12. ELECTRICAL TRANSFORMER PADS ARE TO BE 8 FOOT BY 8 FOOT (PEDERNALES ELECTRIC STD.) W/METER PAD, AND SHALL BE PLACED OUTSIDE OF THE FENCED AREA.
13. THE PROPANE GENERATOR SHALL BE INSTALLED WITHIN 15 FEET OF THE ACCESS DRIVE.
14. POSITIVE DRAINAGE AROUND THE WET WELL SHALL BE MAINTAINED. THE SLAB ELEVATIONS OF THE WET WELL AND VALVE VAULT SHALL BE A MIN OF 6 INCHES ABOVE THE SURROUNDING GRADE. THE ELEVATION OF THE WET WELL AND VALVE VAULT SHALL BE THE SAME WHENEVER POSSIBLE. A 2 PERCENT CROSS SLOPE SHALL BE USED ON THE CONCRETE SLABS.
15. PRIOR TO POURING CONCRETE AROUND THE WET WELL AND VALVE VAULT, THE CONTRACTOR SHALL TAKE STANDARD PROCTOR DENSITIES AND SUBMIT THE RESULTS TO THE INSPECTOR FOR APPROVAL.
16. THE SECURITY FENCE GATE SHALL HAVE THE LOCKING MECHANISM ON THE LEFT GATE FACING THE LIFT STATION. THERE SHALL BE 8 INCHES BETWEEN THE LAST BOARD OF THE LEFT GATE AND THE FIRST BOARD ON THE RIGHT GATE.
17. ADDITIONAL ELECTRIC EASEMENTS MAY BE REQUIRED AT A LATER DATE.
18. WATER AND WASTEWATER SERVICE WILL BE PROVIDED BY HAYS COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT #2.
19. FOR ELECTRICAL AND TELECOMMUNICATIONS SEE ELECTRICAL SITE PLAN, SHEET 54-55
20. ALL CONCRETE PADS SHALL BE A MIN OF 6 INCHES ABOVE THE SURROUNDING GRADE.

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PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

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CONSULTANTS:

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REVISIONS

NO	DATE - DESCRIPTION

EDITED: June 28, 2016
PLOTTED: August 22, 2017
PLOTTED BY: TESCAD15-PC Carlos A. Martinez

BELTERRA SECTION 21-2

LIFT STATION-SITE PLAN

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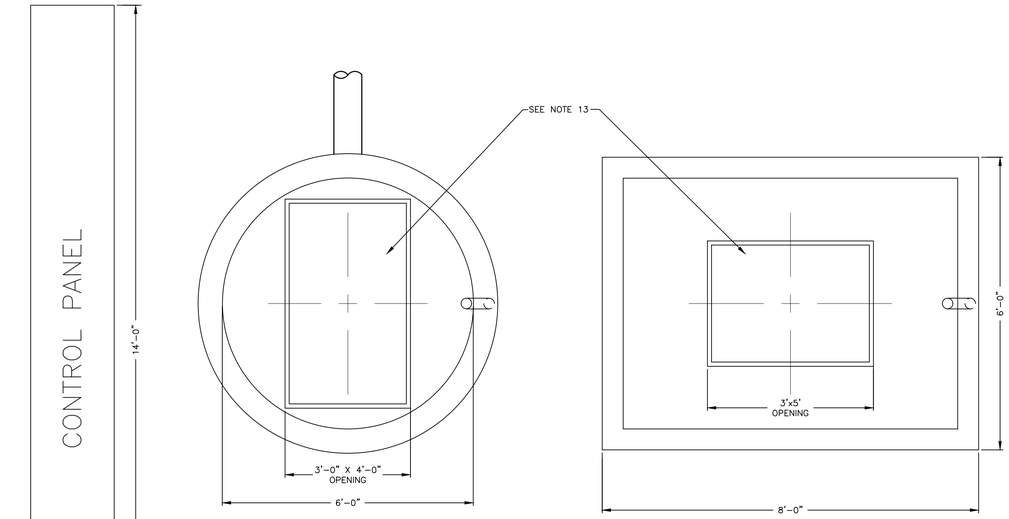

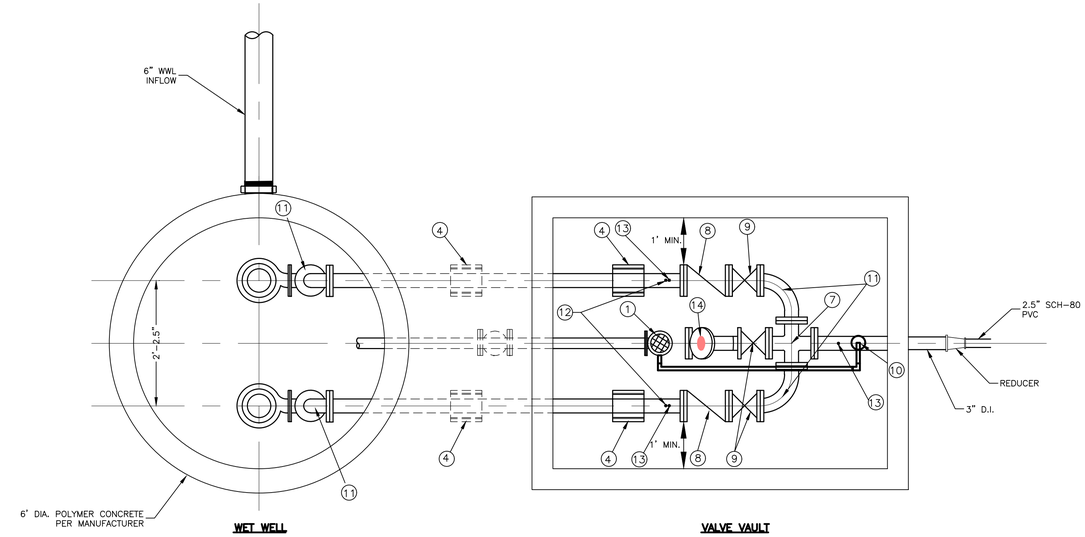

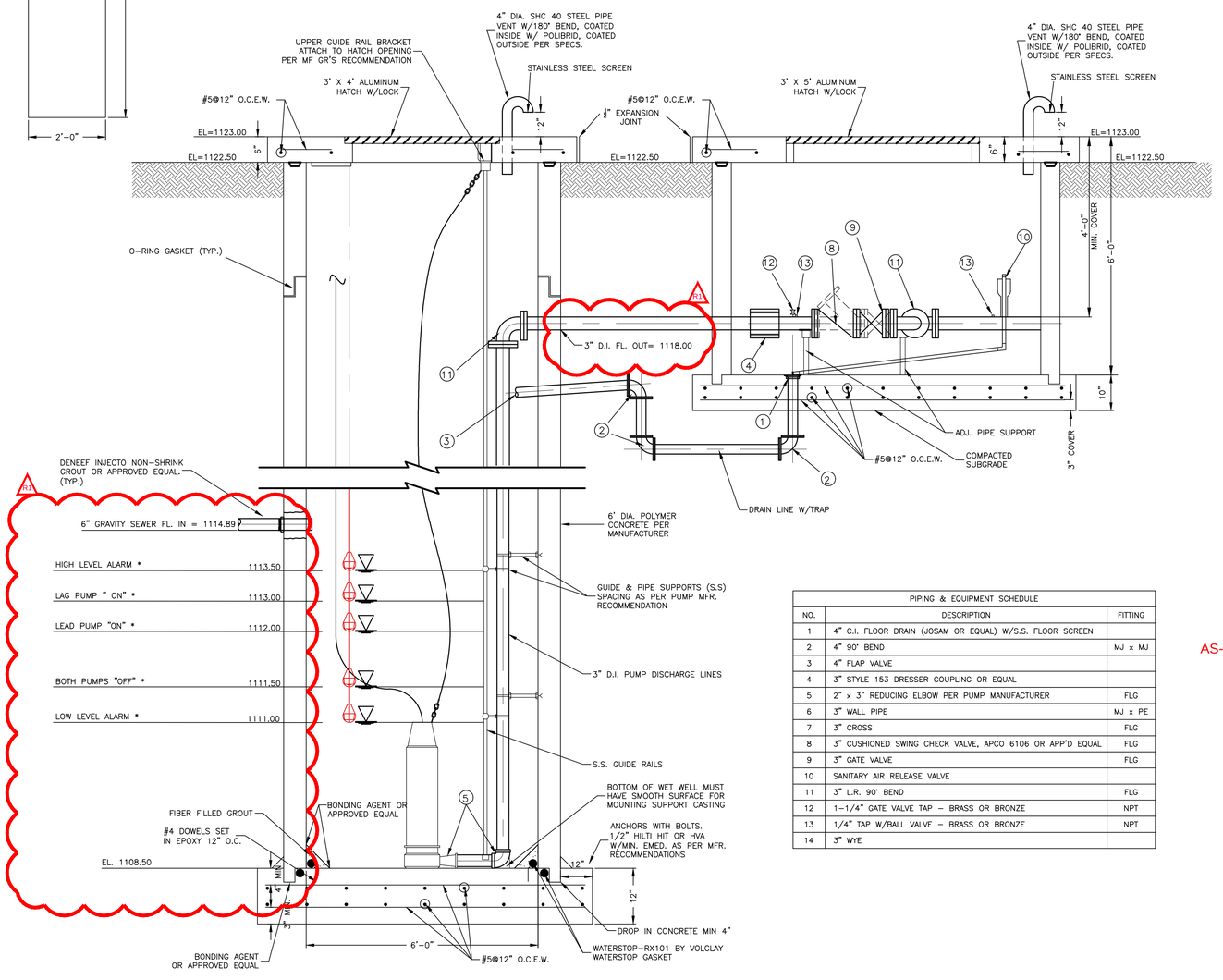

PIPING & EQUIPMENT SCHEDULE		
NO.	DESCRIPTION	FITTING
1	4" C.I. FLOOR DRAIN (JOSAM OR EQUAL) W/S.S. FLOOR SCREEN	
2	4" 90° BEND	MJ x MJ
3	4" FLAP VALVE	
4	3" STYLE 153 DRESSER COUPLING OR EQUAL	
5	2" x 3" REDUCING ELBOW PER PUMP MANUFACTURER	FLG
6	3" WALL PIPE	MJ x PE
7	3" CROSS	FLG
8	3" CUSHIONED SWING CHECK VALVE, APCO 6106 OR APP'D EQUAL	FLG
9	3" GATE VALVE	FLG
10	SANITARY AIR RELEASE VALVE	
11	3" L.R. 90° BEND	FLG
12	1-1/4" GATE VALVE TAP - BRASS OR BRONZE	NPT
13	1/4" TAP W/BALL VALVE - BRASS OR BRONZE	NPT
14	3" WYE	

AS-BUILT

KEYNOTES:

1. VALVE VAULT SHALL BE COATED INSIDE WITH SEWPERCOAT AND OUTSIDE WITH COAL TAR EPOXY.
2. THE ACCESS COVERS SHALL BE A MINIMUM OF 36 INCH BY 48 INCH. PUMP SUPPLIER SHALL PROVIDE DIMENSIONS OF ACCESS COVER TO THE WET WELL TO ENSURE COMPATIBILITY WITH SUPPLIED EQUIPMENT.
3. PUMP SUPPLIER SHALL PROVIDE DIMENSIONS OF THE GUIDE RAILS TO ENSURE COMPATIBILITY WITH SUPPLIED EQUIPMENT. THE PUMP SHALL BE EASILY REMOVED FOR INSPECTION OR SERVICE. PERSONNEL SHALL HAVE NO REASON TO ENTER THE WET WELL. ~~GUIDE RAILS SHALL BE SUPPORTED EVERY 10 FEET WITH STAINLESS STEEL SUPPORTS.~~
4. THE GUIDE BRACKETS SHALL BE CONSTRUCTED OF 300 SERIES STAINLESS STEEL. GUIDE BRACKETS FOR EACH PUMP MUST BE SUPPLIED BY THE PUMP MANUFACTURER TO ENSURE COMPATIBILITY WITH SUPPLIED EQUIPMENT.
5. EACH PUMPING UNIT SHALL BE PROVIDED WITH A STAINLESS STEEL LIFTING CHAIN OR CABLE. LIFTING CHAIN SHALL EXTEND AT LEAST 3-4 FEET ABOVE WET WELL.
6. A 316 STAINLESS STEEL FLOAT MOUNTING ASSEMBLY SHALL BE PROVIDED. THE FLOATS SHALL BE MOUNTED AWAY FROM THE WET WELL INLET, ANY CONTROL WIRING, AND THE PUMPS TO MINIMIZE DISTURBANCE BECAUSE OF TURBULENCE.
7. ALL HARDWARE IN THE WET WELL SHALL BE 300 SERIES STAINLESS STEEL.
8. PUMP/MOTOR DATA

   INTERIM/FINAL
   GPM = 68
   TDH = 78.4 FEET
   HP= 5 H.P.
   RPM = 3450
   PUMP MODEL = BARNES SUBMERSIBLE GRINDER SGV5042L
   IMPELLER = 5.25"
9. ALL STATIONARY PIPING USED IN THE LIFT STATION AND VALVE VAULT SHALL BE COATED DUCTILE IRON OR 300 SERIES STAINLESS STEEL.
10. PUMP DISCHARGE LINES SHALL HAVE 1/4 INCH TAPS WITH STAINLESS STEEL OR BRONZE BALL VALVES.
11. ALL DISCHARGE LINES SHALL HAVE ADEQUATE THRUST SUPPORT MEMBERS AT EACH FITTING. WHERE POSSIBLE, LONG RADIUS 90 DEGREE BENDS SHALL BE USED.
12. THE DISCHARGE LINE FROM EACH PUMP SHALL BE FITTED WITH A CHECK VALVE AND A GATE VALVE, WITH THE CHECK VALVE ON THE PUMP SIDE OF THE GATE VALVE. WHEN NECESSARY, AIR RELEASE VALVE(S) SHALL BE INSTALLED DOWNSTREAM OF THE GATE VALVES.
13. THE VALVE VAULT SHALL BE SIZED LARGE ENOUGH TO PROVIDE AT LEAST 1 FOOT OF CLEARANCE AROUND ALL VALVES AND 6 INCHES OF CLEARANCE TO ALL FLANGES. THE LID OF THE VAULT SHALL BE A MINIMUM OF 36"x60" & MUST BE TRAFFIC BEARING & SHALL BE ABLE TO BE PADLOCKED. THE WET WELL LID SHALL BE 36 INCHES BY 48 INCHES. THE VAULT SHALL BE COATED WITH THE SAME COATINGS AS THE WET WELL. ALL PIPING SHALL BE COATED WITH AN APPROVED COATING.
14. THE VALVE VAULT SHALL HAVE A DRAIN TO THE WET WELL. THE DRAIN SHALL HAVE A 4 INCH MINIMUM DIAMETER AND BE FITTED WITH A FLAP VALVE OR BACK-FLOW PREVENTER AND A TRAP TO PREVENT GASES OR WATER FROM ENTERING THE VALVE VAULT. THE OPENING TO THE DRAIN SHALL BE COVERED WITH A STAINLESS STEEL SCREEN.
15. VENT SHALL BE COATED INSIDE AND OUT PER STANDARD SPECIFICATIONS. THE VENT SHALL BE FITTED WITH A STAINLESS STEEL SCREEN.
16. THE LIFT STATION WET WELL HATCH NEEDS TO OPEN AWAY FROM THE CONTROL PANEL.
17. SNUBBERS AND PRESSURE GAGES SHALL BE PROVIDED ON 1/4" AND 1-1/4" VALVES.

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PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

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REVISIONS

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R1	2017-12-21-UPDATE WET WELL FLOW LINES

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PLOTTED: February 15, 2019
PLOTTED BY: Carlos Martinez

BELTERRA SECTION 21-2

LIFT STATION-LAYOUT

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ELECTRICAL SYMBOL LEGEND

NOT ALL SYMBOLS SHOWN MAY BE USED

PLAN LEGEND

SYMBOL	DESCRIPTION
(J)	JUNCTION BOX
□J	DISCONNECT SWITCH
⊠	MOTOR STARTER OR LIGHTING CONTACTOR, SURFACE MOUNTED
⊠J	COMBINATION MOTOR STARTER, AND DISCONNECT SWITCH, SURFACE MOUNTED
1 M	MANHOLE, NUMBER OF MANHOLE SHOWN NEXT TO SYMBOL
1 C	COMMUNICATIONS MANHOLE, NUMBER OF MANHOLE SHOWN NEXT TO SYMBOL
MH 23A T	TELECOMMUNICATIONS MANHOLE, NUMBER OF MANHOLE SHOWN NEXT TO SYMBOL
(W)	KEYED NOTE, NUMBER IN POSITION "W" MATCHES NOTE NUMBER
$	SWITCH, TOGGLE, WALL MOUNTED, (SINGLE POLE THROW) MOUNT 48" AFF, UON
$3	SWITCH, TOGGLE, WALL MOUNTED, THREE WAY, (SINGLE POLE DOUBLE THROW) MOUNT 48" AFF, UON
$EP	EXPLOSION PROOF SWITCH, TOGGLE, WALL MOUNTED, (SINGLE POLE THROW) MOUNT 48" AFF, UON
$M	SWITCH, MOTOR RATED, WITH THERMAL OVERLOADS
	TERMINAL BOARD
▼	TELEPHONE OUTLET, PRIVATE, MOUNTED 12" AFF, UON
(WH)	WATTHOUR METER
○	POLE
H	TRANSFORMER, PAD MOUNTED, KVA RATING MAY BE DISPLAYED NEXT TO SYMBOL
T	TRANSFORMER, DRY TYPE, KVA RATING MAY BE DISPLAYED INSIDE OF SYMBOL
	ANTENNA
W–X, Y, Z	CONDUIT AND/OR WIRING HOMERUN TO PANEL. TERMINAL BOARD, OR CONTROLLER, USED WITH THE FOUR PRECEDING SYMBOLS. DESTINATION EQUIPMENT IDENTIFIER SHOWN IN POSITION "W" CIRCUIT NUMBER SHOWN IN POSITIONS "X", "Y", OR "Z". THESE CIRCUITS MAY ONLY SHOW ONE CIRCUIT NUMBER
	WIRING CONTINUATION
	FLEXIBLE CONDUIT
	HOMERUN
	CONDUIT CAPPED FOR FUTURE USE
	CONDUIT GOING DOWN
	CONDUIT GOING UP
	CONDUIT RUN UNDERGROUND OR CONCEALED
	CONDUIT RUN EXPOSED
	120V RECEPTACLE FLUSH MOUNTED
	250V RECEPTACLE FLUSH MOUNTED
	WELDING OUTLET
(T)	THERMOSTAT
	PANELBOARD SURFACE MOUNTED

GROUNDING LEGEND

SYMBOL	DESCRIPTION
A OR B	GROUNDING RECEPTACLE = A, GROUND TEST WELL = B
B	CONDUCTOR BARE UON
	GROUNDING CONNECTION
G	GROUND BUS BAR LENGTH AS SHOWN BY SYMBOL LENGTH UON
	COPPERCLAD GROUND ROD

SYMBOL	MODIFIERS
(E)	EXISTING
WP	WEATHERPROOF
EP	EXPLOSION PROOF
GFCI	GROUND FAULT CIRCUIT INTERRUPTER CIRCUIT
T	TELEPHONE
P	POWER
F	FIRE ALARM
VT	VAPORTIGHT
WT	WATERTIGHT
PT	PAINTTIGHT
P	PRIMARY
O	OVERHEAD
U	UNDERGROUND
S	SECONDARY
FT	FIXED TEMPERATURE
R	RECESSED
G	GROUNDED
UNG	UNGROUNDED

ONE LINE AND CONTROL SCHEMATIC LEGEND

SYMBOL	DESCRIPTION
	GROUNDING CONNECTION, WHEN USED WITH TRANSFORMER SYMBOL IT DENOTES A NEUTRAL GROUNDING CONNECTION
	GROUNDED WYE WINDING CONNECTION
Δ	DELTA WINDING CONNECTION
	RELAY OR CONTACTOR CONTACTS
	SEPARABLE CONNECTOR OR CONNECTION FOR DRAWOUT ASSEMBLIES
●	CONDUCTOR CONNECTION
	CIRCUIT BREAKER, MOLDED CASE, TRIP CURRENT AND QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL
	SWITCH, DISCONNECT, NON–FUSED, LOAD BREAK, CONTINUOUS CURRENT RATING AND QUANTITY OF POLES SHOWN NEXT TO SYMBOL
	SWITCH, DISCONNECT, FUSED, LOAD BREAK, FUSED AMPERE RATING AND FUSE TYPE SHOWN NEXT TO SYMBOL
	FUSE, AMPERE RATING AND FUSE TYPE SHOWN NEXT TO SYMBOL
	MOTOR THERMAL OVERLOAD PROTECTOR
(M)	MOTOR STARTER MAIN CONTACTOR
(CR)	CONTACTOR OR RELAY COIL, LETTER(S) INSIDE OF SYMBOL MATCH CONTACTS CONTROLLED
(PT)	PRESSURE TRANSMITTER
	EQUIPMENT ENCLOSURE
VS	VOLTMETER SWITCH
AS	AMMETER SWITCH
(A)	AMMETER
(V)	VOLTMETER
	CURRENT TRANSFORMER WITH RATIO SHOWN
(10)	MOTOR, 10 HORSEPOWER SHOWN
	LIMIT SWITCH NORMALLY CLOSED
	LIMIT SWITCH NORMALLY OPEN
	MOTOR OPERATED VALVE GEARED LIMIT SWITCH
	PRESSURE SWITCH NORMALLY CLOSED OPENS ON INCREASING PRESSURE
	PRESSURE SWITCH NORMALLY OPEN CLOSES ON INCREASING PRESSURE
	LEVEL SWITCH NORMALLY CLOSED OPENS ON INCREASING LEVEL
	LEVEL SWITCH NORMALLY OPEN CLOSES ON INCREASING LEVEL
	FLOW SWITCH NORMALLY CLOSED OPENS WITH FLOW
	FLOW SWITCH NORMALLY OPEN CLOSES ON LOSS OF FLOW
	SPACE HEATER
(PF)	PHASE FAILURE RELAY
	DRAW–OUT CIRCUIT BREAKER
50 51	INSTANTANEOUS/TIME OVERCURRENT RELAY
51N	NEUTRAL TIME OVERCURRENT RELAY
	CABLE TERMINATOR
27 47	UNDERVOLTAGE/PHASE–SEQUENCE RELAY
86	LOCKOUT RELAY
(DO)	DESOLVED OXYGEN SENSOR
(FS)	FLOW SWITCH
(AI)	ANALYTIC INDICATOR
(LT)	LEVEL TRANSDUCER
(FM)	FLOW METER

ONE LINE AND CONTROL SCHEMATIC LEGEND (CONT'D)

SYMBOL	DESCRIPTION
	INSTRUMENT TRANSFORMER PT–POTENTIAL TRANSFORMER
480V 120V	CONTROL POWER TRANSFORMER. VOLTAGE AS SHOWN
	LIGHTNING ARRESTOR
	SWITCH
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	MOMENTARY PUSHBUTTON
HAND OFF AUTO	THREE POSITION MAINTAINED CONTACT SWITCH
MOV	MOTOR OPERATED VALVE
	SOLENOID VALVE
ETM	ELAPSED TIME METER
TD 0–10 MIN. TOE	TIME DELAY RELAY. TIMES OUT AFTER ENERGIZATION
TD 0–10 MIN. TOD	TIME DELAY RELAY. TIMES OUT AFTER DENERGIZATION
R	PILOT LIGHT R=RED B=BLUE G=GREEN A=AMBER Y=YELLOW
LSHH	HIGH LEVEL FLOAT SWITCH
LSLL	LOW LEVEL CUTOFF FLOAT SWITCH
MCP SIZE 1 FVNR	MOTOR STARTER FVNR=FULL VOLTAGE NON–REVERSING VFD=VARIABLE FREQUENCY DRIVE WITH BYPASS SOFT START=ELECTRONIC SOFT START RVNR=REDUCED VOLTAGE NON–REVERSING FVR=FULL VOLTAGE REVERSING MCP=MOTOR CIRCUIT PROTECTOR SIZE=NEMA STARTER SIZE
STE	LEVEL SENSOR TERMINATION ENCLOSURE
TS	TEMPERATURE SWITCH
MP	MOISTURE PROBE
SOV	SOLENOID VALVE
LS	LIMIT SWITCH
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
PS	PRESSURE SWITCH
LC	LIGHTING CONTACTOR

2 working days Call before you Dig. CALL 811

CONDUIT AND WIRING LEGEND

	NEW
	EXISTING TO BE REMOVED
	EXISTING TO REMAIN
UE	UNDERGROUND ELECTRICAL
UT	UNDERGROUND TELEPHONE
UCTV	UNDERGROUND CABLE TV
UG	UNDERGROUND GROUNDING
OE	OVERHEAD ELECTRICAL

ABBREVIATIONS

A	AMPERES OR TRIP AMPERES
AC	ALTERNATING CURRENT
ACT	ABOVE COUNTER TOP
A/C	AIR CONDITIONING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	SYMMETRICAL AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAGE
BD	BOARD
BLDG	BUILDING
C	CONDUIT
CAB	CABINET
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CURRENT LIMITING
CONN	CONNECT OR CONNECTION
CONT'D	CONTINUED
CONTR	CONTRACTOR
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DBL	DOUBLE
DIM	DIMENSION
DISC SW	DISCONNECT SWITCH
DC	DIRECT CURRENT
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRICAL
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONDUIT
FIX	FIXTURE
GC	GENERAL CONTRACTOR
GALV	GALVANIZED
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HOA	HAND–OFF–AUTO
HP	HORSEPOWER
HT	HEIGHT
HTR	HEATER
HZ	HERTZ
JB	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOURS
LA	LIGHTNING ARRESTOR
L–L	LINE TO LINE
L–N	LINE TO NEUTRAL
LTG	LIGHT OR LIGHTING
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER

ABBREVIATIONS (CONT'D)

MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MTD	MOUNTED
MTG	MOUNTING
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT	NEUTRAL
NIC	NOT IN THIS CONTRACT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OH	OVERHEAD
OL	OVERLOAD
ø	PHASE
P	POLE
PC	PHOTOELECTRIC
PEN	PENDANT
PNL	PANELBOARD
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
R	RELOCATED
RECP	RECEPTACLE
REQ'D	REQUIRED
REQ'MTS	REQUIREMENTS
RM	ROOM
SCH	SCHEDULE
SE	SERVICE ENTRANCE
SM	SURFACE MOUNT
SN	SOLID NEUTRAL
SOV	SOLENOID OPERATED VALVE
SPACE	SPACES(S) ONLY (NO BREAKER OR DEVICE)
SPARE	SPARE BREAKER OR DEVICE
SPD	SURGE PROTECTIVE DEVICE
SPECS	CONTRACT SPECIFICATIONS
SS	STAINLESS STEEL HARDWARE
SWBD	SWITCHBOARD
SW	SWITCH
SWGR	SWITCH GEAR
TB	TELEPHONE BACKBOARD
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UT	UNDERGROUND TELEPHONE
VA	VOLT AMPERES
W	WATTS
W/	WITH
WH	WATER HEATER
WP	WEATHER PROOF
XFMR	TRANSFORMER
XMTR	TRANSMITTER
1/C	SINGLE CONDUCTOR CABLE
3/C	THREE CONDUCTOR CABLE

GENERAL NOTES: (APPLICABLE TO ALL ELECTRICAL SHEETS)

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ALL CITY, COUNTY, AND STATE REGULATIONS, NFPA, ANSI, UL, IEEE, AND THE LOCAL CODE AUTHORITY HAVING JURISDICTION. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND INSPECTIONS.
2. ALL ELECTRICIANS SHALL BE LICENSED BY THE APPROPRIATE CITY, STATE, OR LOCAL CODE AUTHORITY HAVING JURISDICTION.
3. THE ELECTRICAL CONTRACTOR SHALL FOLLOW ALL OSHA AND OWNER SAFETY RULES AS REQUIRED TO WORK ON THIS SITE.
4. ALL INSTALLATIONS SHALL BE DONE IN A NEAT AND WORKMAN LIKE MANNER.
5. ALL POWER OUTAGES SHALL BE PERFORMED DURING NON–BUSINESS HOURS. COORDINATE ALL POWER OUTAGES WITH THE OWNER. NOTIFY THE OWNER IN WRITING 10 DAYS PRIOR TO SCHEDULING ANY POWER OUTAGES.
6. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL TEMPORARY ELECTRICAL POWER AND LIGHTING REQUIRED FOR THIS PROJECT.
7. THE DEMOLITION DRAWINGS (IF APPLICABLE) ARE DIAGRAMMATIC IN NATURE. THE ELECTRICAL CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH THE PROJECT SCOPE OF WORK PRIOR TO SUBMITTING THEIR BID.
8. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE ELECTRICAL REQUIREMENTS OF ALL OWNER PROVIDED EQUIPMENT AND SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
9. ALL WORK SHOWN ON DRAWINGS IS NEW UNLESS OTHERWISE NOTED.
10. ALL GROUNDING SHALL BE PER NEC AND LOCAL CODES.
11. ALL ELECTRICAL CONSTRUCTION ON THE PROJECT SHALL CONFORM TO THE NEC AND ALL OTHER AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED AND PAY ALL FEES.
12. ALL WIRING SHALL BE FREE OF SHORTS AND GROUNDS. NO CIRCUIT WIRING SHALL BE LOADED BEYOND THE PERMITTED AMPACITIES ALLOWED BY THE NEC. ALL WIRE SIZES ARE FOR COPPER.
13. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BID.
14. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND MATERIALS NECESSARY TO MAKE A COMPLETE AND WORKABLE JOB INCLUDING FINAL HOOK–UP OF ALL EQUIPMENT.
15. FIRE STOP SHALL BE PROVIDED AT ALL LOCATIONS WHERE ELECTRICAL EQUIPMENT OR SYSTEMS PENETRATE FIRE RATED WALLS. SEE ARCHITECTURAL PLANS FOR RATED WALL LOCATIONS. CONTROL WIRING TO MECHANICAL EQUIPMENT IS NOT SHOWN ON THESE SHEETS.
16. RISER AND ONE–LINE DIAGRAMS ARE MEANT TO SHOW ONLY VERTICAL AND ELECTRICAL RELATIONSHIPS AND THEREFORE MAY NOT INCLUDE ALL REQUIRED EQUIPMENT, DEVICES AND ACCESSORIES.
17. EQUIPMENT INTERRUPTING CAPACITIES SPECIFIED IN THE CONTRACT DOCUMENTS ARE BASED UPON EQUIPMENT CHARACTERISTICS AND IMPEDANCES SHOWN ON THE DRAWINGS. IF ACTUAL INSTALLED EQUIPMENT DEVIATES FROM THESE CHARACTERISTICS OR HAS LOWER IMPEDANCES THE CONTRACTOR SHALL INCREASE THE INTERRUPTING CAPACITIES OF ALL ITEMS ON THE LOAD SIDE OF THE DEVIANT EQUIPMENT IN DIRECT PROPORTION TO THE CHANGED CHARACTERISTICS. INTERRUPTING CAPACITIES SHALL NOT BE REDUCED TO VALUES LESS THAN THOSE REQUIRED BY THE CONTRACT DOCUMENTS.
18. EQUIPMENT SIZES ARE AS DESIGNED. CIRCUIT BREAKERS, CONDUIT, MOTOR STARTERS, DISCONNECT SWITCHES, PLUG–IN'S, ETC., SHALL BE ADJUSTED TO THE EQUIPMENT SUBMITTED AND APPROVED FOR INSTALLATION ON THIS PROJECT.
19. REFER TO ARCHITECTURAL OR CIVIL DRAWINGS FOR SITE INFORMATION.
20. LIGHT FIXTURE MOUNTING HEIGHTS ARE MEASURED BETWEEN THE FLOOR AND THE BOTTOM OF THE FIXTURE.

THIS RECORD DOCUMENT HAS BEEN PREPARED BASED IN PART UPON INFORMATION FURNISHED BY OTHERS. THE DESIGN PROFESSIONAL CANNOT ASSURE THE ACCURACY OF OTHERS INFORMATION AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS RECORD DOCUMENT OR FOR ANY ERROR OR OMISSION THAT MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF IT'S ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

E1.0

THIS DRAWING IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF STEVE L. KANETZKY, P.E. TX #84696 ON 02/05/19. IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

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PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

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REVISIONS

NO	DATE - DESCRIPTION

EDITED:	Oct 03, 2016
PLOTTED:	----
PLOTTED BY:	Gary Brubaker

CRESCENT BELTERRA SECTION 21-2

ELECTRICAL NOTES, SYMBOLS, & ABBREVIATIONS

XX OF X

ELECTRICAL SPECIFICATIONS: DIVISION 26 ELECTRICAL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. ELECTRICAL SYSTEMS

1.02 RELATED WORK

A. THE WORK COVERED BY THIS SPECIFICATION CONSISTS OF FURNISHING ALL LABOR, SUPPLIES AND MATERIALS, SHOP DRAWINGS AND A LIST OF MAKE AND CATALOG NUMBERS OF ALL EQUIPMENT AND MATERIALS TO BE INSTALLED AND PERFORMING ALL OPERATIONS, INCLUDING INSTALLATION OF LIGHTING FIXTURES, ELECTRICAL EQUIPMENT, CUTTING AND PATCHING, COORDINATION WITH OTHER TRADES ON THE JOB, ETC., NECESSARY FOR THE INSTALLATION OF COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED. THESE SPECIFICATIONS SUPPLEMENT THE GENERAL CONDITIONS AND SPECIFICATIONS.

B. EXAMINATION OF SITE: THE CONTRACTOR SHALL THOROUGHLY EXAMINE SITE AND SATISFY HIMSELF AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE CONTRACTOR SHALL VERIFY AT THE SITE ALL MEASUREMENTS AFFECTING HIS WORK AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF THE SAME. NO EXTRA COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR EXPENSES DUE TO HIS NEGLECT TO EXAMINE OR FAILURE TO DISCOVER CONDITIONS WHICH AFFECT HIS WORK. NO EXTRA COMPENSATION WILL BE ALLOWED ON ACCOUNT OF DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THOSE INDICATED ON THE DRAWINGS.

C. THE AGREEMENT FORMS, GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS OF THE SPECIFICATIONS SHALL APPLY TO THE WORK SPECIFIED IN DIVISION 16.

1.03 DEFINITION

A. "WIRING": WIRE OR CABLE, INSTALLED IN RACEWAY WITH ALL REQUIRED BOXES, FITTINGS, CONNECTORS AND ACCESSORIES, COMPLETELY INSTALLED.

B. "FEEDER": WIRING TO ANY DEVICE OR EQUIPMENT IN WHICH NUMBER SIX AWG COPPER (#6 CU) OR LARGER CONDUCTORS ARE USED.

C. "POWER WIRING": WIRING TO ANY DEVICE OR EQUIPMENT SERVED BY A MULTI-POLE BREAKER.

1.04 QUALITY ASSURANCE

A. CODES: COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ANY OTHER AUTHORITIES HAVING JURISDICTION OVER THE WORK.

B. PERMITS AND INSPECTIONS: PROVIDE ALL PERMITS REQUIRED AND OBTAIN FINAL INSPECTION AND APPROVAL FROM THE INSPECTION DEPARTMENT HAVING JURISDICTION.

C. WHERE DIFFERENT SECTIONS OF ANY APPLICABLE CODES SPECIFY DIFFERENT MATERIALS, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE SHALL GOVERN.

D. STANDARDS FOR MATERIAL AND WORKMANSHIP: USE MATERIALS THAT ARE NEW AND LISTED AND LABELED BY UNDERWRITERS LABORATORIES (UL) AS CONFORMING TO ITS STANDARDS, WHERE SUCH A STANDARD HAS BEEN ESTABLISHED FOR THE PARTICULAR TYPE OF MATERIAL IN QUESTION. EXECUTE WORK IN A WORKMAN LIKE MANNER, TO PRESENT A NEAT AND MECHANICAL APPEARANCE WHEN COMPLETED.

1.05 SUBSTITUTION OF MATERIALS

A. NO SUBSTITUTION OF MATERIAL IS ALLOWED WITHOUT WRITTEN PRIOR AUTHORIZATION FROM THE ENGINEER AND OWNER. DETERMINATION OF WHAT IS CONSIDERED EQUAL IS AT THE SOLE DISCRETION OF THE ENGINEER AND OWNER.

B. INCLUDE SUFFICIENT DESCRIPTIVE INFORMATION, INCLUDING MANUFACTURER'S PUBLISHED DATA TO ESTABLISH CONTRACT COMPLIANCE. SUBMIT SAMPLES IF REQUESTED BY ARCHITECT/ENGINEER.

1.06 DRAWINGS AND SPECIFICATIONS

A. THE WIRING LAYOUTS ARE SCHEMATIC AND DO NOT NECESSARILY SHOW THE EXACT LOCATION OF RACEWAYS, OUTLETS, ETC. REFER TO THE ARCHITECTURAL DRAWINGS FOR ACTUAL DIMENSIONS. FIT WORK TO CONFORM TO THE DETAILS OF BUILDING CONSTRUCTION. COORDINATE ALL WORK TO ASSURE PROPER CLEARANCE.

1.07 AS-BUILT DRAWINGS

A. AS WORK PROGRESSES, RECORD ON ONE (1) SET OF ELECTRICAL PRINTS ALL CHANGES AND DEVIATIONS FROM THE CONTRACT DOCUMENTS IN SIZE, LOCATIONS AND TYPES OF ALL MATERIALS AND EQUIPMENT. RECORD FINAL LOCATION OF OUTLETS, SWITCHES, STARTERS, UNDERGROUND AND EXPOSED CONDUITS, ETC. TO INDICATE THE FINAL INSTALLATION. MAKE SUFFICIENT MEASUREMENTS TO LOCATE ALL EQUIPMENT AND CONDUITS. PROVIDE AS-BUILT DRAWINGS.

B. THE CONTRACTOR SHALL PREPARE A TYPED PANEL DIRECTORY FOR EACH PANEL UTILIZED FOR THIS PROJECT. THIS DIRECTORY SHALL IDENTIFY THE CIRCUIT NUMBER, DEVICES SERVED, AND LOCATION OF DEVICES BY ROOM NUMBER. HE SHALL FILE THEM WITH THE BUILDING MANAGER WHEN THE WORK IS COMPLETE.

1.08 MAINTENANCE DATA

A. FURNISH AND DELIVER TO THE ARCHITECT/ENGINEER TWO (2) COMPLETE COPIES OF ALL DATA PREPARED BY MANUFACTURERS, DETAILING OPERATION AND MAINTENANCE INSTRUCTION FOR ALL EQUIPMENT.

1.09 PENETRATIONS, CUTTING, AND PATCHING

A. PERFORM CUTTING AND PATCHING IN ACCORDANCE WITH THE GENERAL AND SUPPLEMENTARY CONDITIONS OF THE CONTRACT.

B. PROVIDE ALL SLEEVES REQUIRED FOR PROPER INSTALLATION OF WORK INCLUDED IN THIS SECTION.

C. MAKE ALL PENETRATIONS THROUGH WALLS AT 90 DEGREE ANGLES. SEAL ALL PENETRATIONS AT FIRE AND SMOKE PARTITIONS WITH FIRE SAFING MATERIAL. SEAL ALL PENETRATIONS AT SOUND WALLS WITH SOUNDPROOFING MATERIAL.

1.10 SUBMITTALS

A. SHOP DRAWINGS AND MATERIAL BROCHURES: FURNISH AN ELECTRONIC SET OF SHOP DRAWINGS AND PRODUCT DATA IN PDF FORMAT TO THE ARCHITECT/ENGINEER ON THE FOLLOWING MATERIALS:

1. LIGHTING FIXTURES
2. DISCONNECT SWITCHES
3. TRANSFORMERS
4. RACEWAYS
5. CONDUCTORS
6. MOTOR CONTROLLERS
7. SWITCHGEAR, PANELBOARDS
8. CONTROL PANELS
9. INSTRUMENTATION

1.11 COOPERATION

A. THE CONTRACTOR SHALL SCHEDULE HIS WORK, AND IN EVERY WAY POSSIBLE, COOPERATE WITH ALL OTHER TRADES IN THE JOB TO AVOID DELAYS, INTERFERENCES AND UNNECESSARY WORK. HE SHALL COOPERATE WITH THEM IN PROVIDING FOR THE INSTALLATION OF THIS WORK AND COORDINATE WITH WORK OF OTHER TRADES TO ASSURE PROPER CLEARANCE OF PIPING, DUCTWORK, CONDUIT, ETC. WHEN SUCH IS REQUIRED.

1.12 WIRING WORKMANSHIP

A. RUN WIRING IN ALL BRANCH CIRCUIT PANELBOARDS AND TERMINAL CABINETS PARALLEL OR AT RIGHT ANGLES TO THE SIDES OR TOP OF THE EQUIPMENT HOUSING.

B. GROUP AND HARNESS CONDUCTORS TOGETHER USING LOCKING TYPE CABLE TIES. CABLE TIES: AS MANUFACTURED BY THE PANDUIT CORPORATION OR THOMAS AND BETTS.

1.13 STORAGE MATERIALS

A. KEEP THE BUILDING AND PREMISES CLEAN AND CLEAR OF SCRAP MATERIALS AT ALL TIMES. STORE MATERIALS AND EQUIPMENT IN DESIGNATED STORAGE AREAS.

1.14 ORDERING OF MATERIALS

A. ORDER MATERIALS AND EQUIPMENT SO AS NOT TO JEOPARDIZE PROGRESS OF CONSTRUCTION OR COMPLETION DATE.

1.15 SAFETY PRECAUTIONS AND PROGRAMS

A. IT SHALL BE THE DUTY AND RESPONSIBILITY OF THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS TO BE FAMILIAR AND COMPLY WITH ALL REQUIREMENTS OF PUBLIC LAW 91-96, 29 U.S.C. SECS. 651 ET. SEQ., THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (OSHA), AND ALL AMENDMENTS THERETO AND TO ENFORCE AND COMPLY WITH ALL OF THE PROVISIONS OF THIS ACT. IN ADDITION, ON PROJECTS IN WHICH TRENCH EXCAVATION WILL EXCEED A DEPTH OF FIVE FEET (5'), THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS SHALL COMPLY WITH ALL REQUIREMENTS OF 29 C.F.R., SECS. 1926.652 AND 1926.653, OSHA SAFETY AND HEALTH STANDARDS.

1.16 WARRANTY

A. GUARANTEE ALL WORK UNDER THIS SECTION FOR WORKMANSHIP, LABOR AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.

PART 2 - PRODUCTS AND EXECUTION

2.01 CONDUIT

A. EXCEPT AS OTHERWISE NOTED, SPECIFIED OR REQUIRED, INSTALL ALL WIRES USED IN THIS PROJECT IN CONDUIT AS HEREINAFTER SPECIFIED:

BELOW GRADE: SCHEDULE 40 PVC
ABOVE GRADE: ALUMINUM RIGID
ELBOWS: PVC COATED RIGID STEEL

B. INSTALL CONDUITS CONTINUOUS FROM OUTLET TO OUTLET, FROM OUTLET TO CABINET, JUNCTION BOX AND PULL BOX. SECURE CONDUITS TO ALL BOXES, ETC., IN SUCH A MANNER THAT EACH SYSTEM WILL BE ELECTRICALLY CONTINUOUS FROM SERVICE TO ALL OUTLETS. TERMINATE ALL CONDUIT RUNS FROM CABINETS AND JUNCTION BOXES IN APPROVED OUTLET BOXES. INSTALL CONDUITS AS HIGH AS POSSIBLE UP AGAINST STRUCTURE ABOVE. AVOID ROUTING CONFLICTS WITH HVAC EQUIPMENT/DUCTWORK, SANITARY WASTE, VENT PIPING, AND DOMESTIC WATER PIPING.

C. INSTALL A NYLON PULL WIRE (200 LB. TEST) AND TIE ENDS IN ALL CONDUIT LINES LEFT EMPTY FOR FUTURE USE.

D. TRAPPED OR INACCESSIBLE JUNCTION BOXES, OUTLETS, ETC. ARE NOT ALLOWED.

E. GENERALLY, CONCEAL ALL CONDUITS UNLESS OTHERWISE DIRECTED OR INDICATED ON THE DRAWINGS.

F. NO BENDS PERMITTED WITH A RADIUS LESS THAN SIX (6) TIMES THE DIAMETER OF THE CONDUIT OR MORE THAN 900.

G. PROVIDE JUNCTION BOXES OR PULL BOXES TO AVOID EXCESSIVE RUNS OR TOO MANY BENDS BETWEEN OUTLETS.

H. INCREASE CONDUIT SIZES SHOWN ON THE PLANS AS REQUIRED FACILITATING PULLING OF CONDUCTORS.

I. RUN ALL CONDUITS PARALLEL TO OR AT RIGHT ANGLES TO THE BUILDING WALLS AND SUPPORT FROM WALLS OR CEILINGS AT INTERVALS REQUIRED BY CODE WITH APPROVED CLAMPS OR HANGERS.

J. INSTALL APPROVED APPLETON, CROUSE HINDS, OR O.Z. MANUFACTURING CO. EXPANSION FITTINGS IN ALL EMT RUNS WHICH PASS THROUGH EXPANSION JOINTS IN THE BUILDING. OTHER METHODS TO PROVIDE FOR THIS EXPANSION MUST BE APPROVED BY THE ARCHITECT/ENGINEER.

2.02 WIRING

A. INSTALL WIRING AS FOLLOWS:

1. FEEDERS AND POWER WIRING: CONDUCTORS IN RIGID ALUMINUM RIGID CONDUIT WHEN INSTALLED IN DRY LOCATION ABOVE GRADE. SCHEDULE 40 PVC WHEN INSTALLED BELOW GRADE. USE PVC COATED RIGID ELBOWS.
2. BRANCH CIRCUITS: INSTALL CONDUCTORS IN ALUMINUM RIGID CONDUIT.
3. INSTALL ALL WIRING IN CONDUIT. USE ONLY UL LISTED LUBRICANTS IN PULLING THE CONDUCTORS.
4. INSTALL CONDUCTORS CONTINUOUS FROM OUTLET TO OUTLET AND FROM OUTLET TO JUNCTION BOX OR PULL BOX. INSTALL SPLICES AND JOINTS CAREFULLY AND SECURELY TO BE MECHANICALLY AND ELECTRICALLY SOLID WITH PRESSURE TYPE CONNECTORS. USE 3M "SCOTCHLOCK" OR IDEAL "WING NUT" OR EQUAL TWIST-ON CONNECTORS FOR #10 AND SMALLER CONDUCTORS.
5. CONNECT CONDUCTORS FOR LIGHTING AND RECEPTACLE CIRCUITS TO THE PANEL AS DETAILED WITH COLOR CODED JACKET. COLOR CODE ALL WIRES WITH THE TYPE, SIZE, MAKE AND VOLTAGE MARKED ON IT. COLOR CODE WIRING WITH THE SAME COLOR BEING USED WITH ITS RESPECTIVE PHASE AS FOLLOWS, UNLESS OTHERWISE REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

	120/240 VOLT DELTA	120/208 VOLT WYE	480/277 VOLT WYE
PHASE A	RED	RED	BROWN
PHASE B	ORANGE	BLACK	YELLOW
PHASE C	BLACK	BLUE	PURPLE
NEUTRAL	WHITE	WHITE	GRAY
GROUND	GREEN	GREEN	GREEN

6. BRANCH CIRCUIT CONDUCTORS SHALL NOT BE SMALLER THAN NO. 12 AWG. INCREASE THE WIRE SIZES UP ONE (1) SIZE WHEREVER THE RUN DISTANCE EXCEEDS 200 FEET.
7. ALL WIRING AND CABLE INCLUDING FIBER OPTIC, ELECTRICAL, DATA, TELECOMMUNICATIONS, TEMPERATURE CONTROLS, SECURITY, FIRE PROTECTION, ETC. SHALL BE RUN IN CONDUIT.
8. ELECTRICAL CONTRACTOR MAY GROUP WIRES WITH SAME VOLTAGE FOR FIELD DEVICES IN CONDUIT AS HE DEEMS BEST APPROPRIATE.
9. ANALOG AND LOW VOLTAGE SIGNALS SHALL NOT RUN IN SAME CONDUIT AS 120VAC AND 480VAC CIRCUITS.

2.03 CONDUCTORS

A. COPPER OF 98% CONDUCTIVITY.

B. NO. 10 AND SMALLER: SOLID TYPE THWN/THHN, EXCEPT AS OTHERWISE NOTED.

C. NO. 8 AND LARGER: STRANDED, TYPE THWN/THHN, EXCEPT AS OTHERWISE NOTED.

D. MINIMUM SIZE CONDUCTORS USED SHALL BE NO. 12 AWG FOR ALL APPLICATIONS EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE (A.C. CONTROLS, ETC.).

E. USE WIRE AND CABLE FROM ONE (1) MANUFACTURER. DELIVER IN THE ORIGINAL WRAPPING BEARING THE UNDERWRITERS LABORATORIES (UL) LABEL.

2.04 OUTLETS

A. USE GALVANIZED STEEL OR CAST TYPE BOXES AT ALL OUTLETS FOR LIGHTING FIXTURES, WALL SWITCHES, WALL RECEPTACLES, ETC.

B. SECURELY ATTACH OUTLET BOXES FOR FIXTURES AND DEVICES TO THE BUILDING CONSTRUCTION WITH EXPANSION BOLTS.

C. FLUSH MOUNT ALL OUTLET BOXES, REGARDLESS OF WALL OR CEILING CONSTRUCTION, UNLESS THEY ARE SPECIFICALLY SHOWN AS BEING USED WITH EXPOSED CONDUIT. IF SURFACE MOUNTED, USE CAST TYPE AS SPECIFIED ABOVE. UTILITY BOXES ARE NOT ALLOWED.

2.05 INSTALLATION

A. INSTALL RACEWAYS EXPOSED. SUPPORT EXPOSED RACEWAYS AT INTERVALS NOT EXCEEDING TEN FEET (10') WITH MACHINE SCREWS FOR METAL CONSTRUCTION AND EXPANSION BOLTS FOR CONCRETE CONSTRUCTION.

B. INSTALL THE EDGES OF ALL OUTLET BOXES FLUSH WITH THE SURFACE IN WHICH THEY ARE RECESSED. SCREW ATTACH INTERNAL DEVICES BEFORE ATTACHING COVERPLATE. DO NOT USE COVERPLATES AS A MEANS OF TIGHTENING THE DEVICES IN PLACE.

2.06 DISCONNECT AND FEEDER SWITCHES

A. FEEDER SWITCHES AND DISCONNECT SWITCHES: HEAVY DUTY, EXCEPT AS OTHERWISE NOTED. IN DAMP LOCATIONS OR EXPOSED TO THE WEATHER, USE NEMA 3R, RAINTIGHT.

B. DISCONNECT SWITCHES: FACTORY INSTALLED PROVISION FOR PADLOCKING IN EITHER THE "ON" OR "OFF" POSITION.

2.07 FUSES

A. FUSES: BUSSMANN OR APPROVED EQUAL.

2.08 LABELING

A. LABEL ALL PANELS, CONTROL POINTS, SWITCHES, AND MOTORS, AS DIRECTED. IDENTIFY PANELS BY PANEL NUMBER. LABEL SWITCHES, INDICATING THE EQUIPMENT WHICH THEY CONTROL. ALL LABELS SHALL BE ENGRAVED. PANEL DIRECTORIES TO BE TYPED. COORDINATE ALL EQUIPMENT NUMBERING WITH MECHANICAL CONTRACTOR.

B. INSTALL ARC FLASH HAZARD LABELS ON ALL NEW SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES AND MOTOR CONTROL CENTERS PER NEC 110.16. PANDUIT #PPS0305W2100 OR EQUAL.

2.09 GROUNDING

A. PROVIDE GROUNDING FOR ELECTRICAL SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC)

2.10 COVERPLATES

A. WHERE WIRING DEVICES ARE FLUSH MOUNTED, INSTALL STAINLESS STEEL COVERPLATES.

B. WHERE WIRING DEVICES ARE SURFACE MOUNTED, INSTALL FORMED STEEL COVERPLATES WITH CADMIUM PLATING.

C. WHERE WEATHERPROOF COVERPLATES ARE REQUIRED, MEET UL "WET LOCATION COVER CLOSED" REQUIREMENTS. USE COVERPLATES THAT ARE HINGED AND GASKETED WITH SPRING LOADED CLOSER.

D. INSTALL FINISHED COVERPLATES ON ALL JUNCTION BOXES, OUTLET BOXES, SECTIONAL SWITCH BOXES, UTILITY BOXES, ETC.

E. WHERE MORE THAN ONE (1) DEVICE IS INDICATED AT A LOCATION, MOUNT DEVICES IN COMBINED SECTION GANG BOXES, COVERED BY A COMMON PLATE.

2.11 RECEPTACLES

A. DUPLEX RECEPTACLES: 20 AMPERE, 125 VOLT, SELF OR AUTOMATIC GROUNDING, GFCI.

B. SPECIAL MOUNTING HEIGHTS ARE NOTED ON THE ARCHITECTURAL DRAWINGS. UNLESS OTHERWISE INDICATED ON THE ELECTRICAL DRAWINGS, MOUNT DEVICES AT THE FOLLOWING HEIGHTS ABOVE FINISHED FLOOR:

1. DUPLEX RECEPTACLE 18"
2. WALL SWITCHES 48"
3. VOICE & VOICE/DATA OUTLETS 18"
4. WALL & PAY TELEPHONE OUTLETS 48"

2.12 SWITCHES

A. PROVIDE HEAVY-DUTY, AC, QUIET SWITCHES. THE SWITCHES SHALL BE HUBBELL 1221 OR EQUAL, 120-277 VOLT, 20 AMPERES, SPECIFICATION GRADE. SWITCHES SHALL BE SINGLE POLE, DOUBLE POLE, THREE WAY, FOUR WAY, OR KEY OPERATED AS SCHEDULED ON THE DRAWINGS AND SHALL BE THE SELF GROUNDING TYPE. COLOR SHALL BE IVORY.

2.13 LIGHTING FIXTURES

A. PROVIDE ALL LIGHTING FIXTURES, AS SCHEDULED ON DRAWINGS, COMPLETE WITH LAMPS AND HARDWARE. INSTALL COMPLETELY WIRED, CONNECTED AND IN OPERATING ORDER.

B. CONFIRM ALL CEILING CONDITIONS, CLEARANCES AND OPERATING VOLTAGES BEFORE ORDERING LIGHTING FIXTURES.

C. SUBMIT SHOP DRAWINGS.

2.13.1 LAMPS

A. INSTALL SCHEDULED LAMPS MANUFACTURED BY GENERAL ELECTRIC, PHILLIPS, OR APPROVED EQUAL.

2.13.2 FIXTURES

A. PROVIDE LIGHTING FIXTURES WHICH HAVE BEEN TESTED AND CERTIFIED FOR PROPER OPERATION BY THE FIXTURE'S MANUFACTURER.

B. PROVIDE LIGHTING FIXTURES WITH TRIM COMPATIBLE WITH CEILING OR SURFACE ON OR IN WHICH INSTALLED.

C. EACH LUMINAIRE SHALL HAVE TWO SUPPORT WIRES INSTALLED, ONE ON EACH END, AT DIAGONAL CORNERS. LUMINARIES IN FIRE RATED CEILINGS SHALL BE SUPPORTED ON ALL FOUR CORNERS.

D. SUPPORT AND SECURELY ATTACH WITH GALVANIZED FASTENERS IN A LEVEL POSITION.

E. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

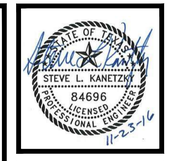
F. FIRE RATED ASSEMBLIES, COMPLY WITH DETAILS OF LISTED ASSEMBLY.

2.14 TEMPORARY POWER

A. PROVIDE TEMPORARY POWER (SMALL TOOL) AND LIGHTING PER OSHA REQUIREMENTS.

E1.1

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.



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PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

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REVISIONS

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PLOTTED BY: Gary Brubaker

CRESCENT BELTERRA SECTION 21-2

ELECTRICAL SPECIFICATIONS

XX OF X

PACKAGE STANDBY DIESEL GENERATOR 30 KW

1 GENERAL

1.1 REFERENCES AND STANDARDS

THE GENERATOR SET COVERED BY THESE SPECIFICATIONS SHALL BE DESIGNED, TESTED, RATED, ASSEMBLED AND INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE STANDARDS BELOW:

- CSA C22.2 NO14
- CSA 282
- CSA 100
- EN61000-6
- EN55011
- FCC PART 15 SUBPART B
- ISO8528
- IEC61000
- UL508
- UL2200
- UL142
- DESIGNED TO ALLOW FOR INSTALLED COMPLIANCE TO NFPA 70, NFPA99 AND NFPA 110

1.2 RELATED SECTIONS

1.2.1 DIVISION 3 - STRUCTURAL CONCRETE

1.2.2 DIVISION 15 - MECHANICAL

1.3 WORK INCLUDED

1.3.1 INSTALLATION

THE WORK INCLUDES SUPPLYING AND INSTALLING A COMPLETE INTEGRATED GENERATOR SYSTEM. THE SYSTEM CONSISTS OF A PROPANE GENERATOR SET WITH RELATED COMPONENT ACCESSORIES AND AUTOMATIC TRANSFER SWITCH(ES) SPECIFIED UNDER A SEPARATE SECTION.

1.3.2 FUEL SYSTEM

THE CONTRACTOR SHALL PROVIDE AND INSTALL REQUIRED PROPANE PIPE CONNECTION FROM GENERATOR TO CUSTOMER 1000 GALLON PROPANE TANK.

1.3.3 SYSTEM TEST

A COMPLETE SYSTEM LOAD TEST SHALL BE PERFORMED AFTER ALL EQUIPMENT IS INSTALLED. GUIDELINES IN THE START-UP SECTION.

1.3.4 REQUIREMENTS, CODES AND REGULATIONS

THE EQUIPMENT SUPPLIED AND INSTALLED SHALL MEET THE REQUIREMENTS OF THE NEC AND ALL APPLICABLE LOCAL CODES AND REGULATIONS. ALL EQUIPMENT SHALL BE OF NEW AND CURRENT PRODUCTION BY A MANUFACTURER WHO HAS 25 YEARS OF EXPERIENCE BUILDING THIS TYPE OF EQUIPMENT. MANUFACTURER SHALL BE ISO9001 CERTIFIED.

1.3.5 APPROVED MANUFACTURES

THE STANDBY PROPANE GENERATOR SHALL BE SUPPLIED BY:

- SOUTHERN PLAINS – CUMMINS®
- WAUKESHA-PEARCE INDUSTRIES, INC. – GENERAC POWER SYSTEMS®
- MTU ONSITE ENERGY®
- TAYLOR POWER SYSTEMS®
- LJ POWER®

OR BY ALTERNATE MANUFACTURES WHO SHALL SUBMIT A REQUEST TWO WEEKS PRIOR TO BID AND INCLUDE A WRITTEN LIST OF DEVIATIONS FROM THIS SPECIFICATION TO BE CONSIDERED FOR APPROVAL.

1.4 SUBSTITUTION

PROPOSED DEVIATIONS FROM THE SPECIFICATIONS SHALL BE TREATED AS FOLLOWS:

1.4.1 SUBSTITUTION TIME REQUIREMENT

REQUESTS FOR SUBSTITUTIONS SHALL BE MADE A MINIMUM OF TWO WEEKS PRIOR TO BID DATE. MANUFACTURERS CATALOG DATA SHALL ACCOMPANY EACH REQUEST AND AUTHORIZED ACCEPTANCE SHALL BE ADDENDA ONLY.

1.4.2 SUBSTITUTION RESPONSIBILITY

THE POWER SYSTEM HAS BEEN DESIGNED TO SOUTHERN PLAINS/CUMMINS ELECTRICAL AND PHYSICAL CHARACTERISTICS. THE EQUIPMENT SIZING, SPACING, AMOUNTS, ELECTRICAL WIRING, VENTILATION EQUIPMENT, FUEL AND EXHAUST COMPONENTS HAVE ALL BEEN SIZED AND DESIGNED AROUND SOUTHERN PLAINS/CUMMINS SUPPLIED EQUIPMENT. SHOULD ANY OF THE OTHER APPROVED MANUFACTURER SUBSTITUTIONS BE MADE, THE CONTRACTOR SHALL BEAR RESPONSIBILITY FOR THE INSTALLATION, COORDINATION AND OPERATION OF THE SYSTEM AS WELL AS ANY ENGINEERING AND REDESIGN COSTS, WHICH MAY RESULT FROM SUCH SUBSTITUTIONS.

1.5 SUBMITTALS

ENGINE-GENERATOR SUBMITTALS SHALL INCLUDE THE FOLLOWING INFORMATION:

1. FACTORY PUBLISHED SPECIFICATION SHEET.
2. MANUFACTURER'S CATALOG CUT SHEETS OF ALL AUXILIARY COMPONENTS SUCH AS BATTERY CHARGER, CONTROL PANEL, ENCLOSURE, ETC.
3. DIMENSIONAL ELEVATION AND LAYOUT DRAWINGS OF THE GENERATOR SET, ENCLOSURE AND TRANSFER SWITCHGEAR AND RELATED ACCESSORIES.
4. WEIGHTS OF ALL EQUIPMENT.
5. CONCRETE PAD RECOMMENDATION, LAYOUT AND STUB-UP LOCATIONS OF ELECTRICAL AND FUEL SYSTEMS.
6. INTERCONNECT WIRING DIAGRAM OF COMPLETE EMERGENCY SYSTEM, INCLUDING GENERATOR, SWITCHGEAR, DAY TANK, REMOTE PUMPS, BATTERY CHARGER, CONTROL PANEL, AND REMOTE ALARM INDICATIONS.
7. ENGINE MECHANICAL DATA, INCLUDING HEAT REJECTION, EXHAUST GAS FLOWS, COMBUSTION AIR AND VENTILATION AIR FLOWS, FUEL CONSUMPTION, ETC.
8. GENERATOR ELECTRICAL DATA INCLUDING TEMPERATURE AND INSULATION DATA, COOLING REQUIREMENTS, EXCITATION RATINGS, VOLTAGE REGULATION, VOLTAGE REGULATOR, EFFICIENCIES, WAVEFORM DISTORTION AND TELEPHONE INFLUENCE FACTOR.
9. GENERATOR RESISTANCES, REACTANCES AND TIME CONSTANTS.
10. GENERATOR LOCKED ROTOR MOTOR STARTING CURVES.
11. MANUFACTURER'S DOCUMENTATION SHOWING MAXIMUM EXPECTED TRANSIENT VOLTAGE AND FREQUENCY DIPS, AND RECOVERY TIME DURING OPERATION OF THE GENERATOR SET AT THE SPECIFIED SITE CONDITIONS WITH THE SPECIFIED LOADS.
12. MANUFACTURER'S AND DEALER'S WRITTEN WARRANTY.

1.7 SYSTEM RESPONSIBILITY

1.7.1 GENERATOR SET DISTRIBUTOR

THE COMPLETED ENGINE GENERATOR SET SHALL BE SUPPLIED BY THE MANUFACTURER'S AUTHORIZED DISTRIBUTOR ONLY.

- SOUTHERN PLAINS – CUMMINS®
- WAUKESHA-PEARCE INDUSTRIES, INC. – GENERAC POWER SYSTEMS®
- MTU ONSITE ENERGY®
- TAYLOR POWER SYSTEMS®
- LJ POWER®

1.7.2 REQUIREMENTS, CODES AND REGULATIONS

THE EQUIPMENT SUPPLIED AND INSTALLED SHALL MEET THE REQUIREMENTS OF NEC AND ALL-APPLICABLE LOCAL CODES AND REGULATIONS. ALL EQUIPMENT SHALL BE NEW, OF CURRENT PRODUCTION. THERE SHALL BE ONE SOURCE RESPONSIBILITY FOR WARRANTY; PARTS AND SERVICE THROUGH A LOCAL REPRESENTATIVE WITH FACTORY TRAINED SERVICE PERSONNEL.

1.7.3 AUTOMATIC TRANSFER SWITCH(ES)

THE AUTOMATIC TRANSFER SWITCH(ES) SPECIFIED IN ANOTHER SECTION SHALL BE SUPPLIED BY THE GENERATOR SET MANUFACTURER IN ORDER TO ESTABLISH AND MAINTAIN A SINGLE SOURCE OF SYSTEM RESPONSIBILITY AND COORDINATION.

1.8 WARRANTY

1.8.1 TWO YEAR STANDBY (ISO 8528-1: ESP) GENERATOR SET WARRANTY

THE MANUFACTURER'S STANDARD WARRANTY SHALL IN NO EVENT BE FOR A PERIOD OF LESS THAN TWO (2) YEARS FROM DATE OF INITIAL START-UP OF THE SYSTEM AND SHALL INCLUDE REPAIR PARTS, LABOR, REASONABLE TRAVEL EXPENSE NECESSARY FOR REPAIRS AT THE JOB SITE, AND EXPENDABLES (LUBRICATING OIL, FILTERS, ANTIFREEZE, AND OTHER SERVICE ITEMS MADE UNUSABLE BY THE DEFECT) USED DURING THE COURSE OF REPAIR. RUNNING HOURS SHALL BE LIMITED TO 500 HOURS ANNUALLY FOR THE SYSTEM WARRANTY BY BOTH THE MANUFACTURER AND SERVICING DISTRIBUTOR. SUBMITTALS RECEIVED WITHOUT WRITTEN WARRANTIES AS SPECIFIED WILL BE REJECTED IN THEIR ENTIRETY.

1.9 PARTS AND SERVICE QUALIFICATIONS

1.9.1 SERVICE FACILITY

THE ENGINE-GENERATOR SUPPLIER SHALL MAINTAIN 24 HOUR PARTS AND SERVICE CAPABILITY WITHIN 100 MILES OF THE PROJECT SITE. THE DISTRIBUTOR SHALL STOCK PARTS AS NEEDED TO SUPPORT THE GENERATOR SET PACKAGE FOR THIS SPECIFIC PROJECT. THE SUPPLIER MUST CARRY SUFFICIENT INVENTORY TO COVER NO LESS THAN 80% PARTS SERVICE WITHIN 24 HOURS AND 95% WITHIN 48 HOURS.

1.9.2 SERVICE PERSONNEL

THE DEALER SHALL MAINTAIN QUALIFIED FACTORY TRAINED SERVICE PERSONNEL.

2 PRODUCT SPECIFICATIONS

2.1 GENERAL REQUIREMENTS

2.1.1 GENSET REQUIREMENTS

THE GENERATOR SET SHALL BE STANDBY DUTY RATED AT 30 EKW, 37.5 KVA, 1800 RPM, 0.8 POWER FACTOR, 480/277V, 3-PHASE, 60 HERTZ, INCLUDING RADIATOR FAN AND ALL PARASITIC LOADS. GENERATOR SET SHALL BE SIZED TO OPERATE AT THE SPECIFIED LOAD AT A MAXIMUM AMBIENT OF 115F (46.1C) AND ALTITUDE OF 1,000.0 FEET (304.8 M).

STANDBY RATING AS DEFINED BY THE FOLLOWING:
TYPICAL LOAD FACTOR = 70% OR LESS WITH VARIABLE LOAD
TYPICAL HOURS PER YEAR = 200 HOURS
MAXIMUM EXPECTED USAGE = 500 HOURS/YEAR
TYPICAL APPLICATION – STANDBY
TYPICAL PEAK DEMAND = 80% OF ESP RATED KW WITH 100% OF RATING AVAILABLE FOR THE DURATION OF AN EMERGENCY OUTAGE

2.1.2 MATERIAL AND PARTS

ALL MATERIALS AND PARTS COMPRISING THE UNIT SHALL BE NEW AND UNUSED.

2.1.3 ENGINE

THE ENGINE SHALL BE PROPANE, SPARK IGNITED FOUR (4) CYCLE, WATER-COOLED, WHILE OPERATING WITH NOMINAL SPEED NOT EXCEEDING 1800 RPM. THE ENGINE WILL UTILIZE IN-CYLINDER COMBUSTION TECHNOLOGY, AS REQUIRED, TO MEET APPLICABLE EPA NON-ROAD MOBILE REGULATIONS AND/OR THE EPA NSPS RULE FOR STATIONARY RECIPROCATING SPARK IGNITION ENGINES. ADDITIONALLY, THE ENGINE SHALL COMPLY WITH THE STATE EMISSION REGULATIONS AT THE TIME OF INSTALLATION/COMMISSIONING. ACTUAL ENGINE EMISSIONS VALUES MUST BE IN COMPLIANCE WITH APPLICABLE EPA EMISSIONS STANDARDS PER ISO 8178 – D2 EMISSIONS CYCLE AT SPECIFIED EKW / BHP RATING. UTILIZATION OF THE "TRANSITION PROGRAM FOR EQUIPMENT MANUFACTURERS" (ALSO KNOWN AS "FLEX CREDITS") TO ACHIEVE EPA CERTIFICATION IS NOT ACCEPTABLE. THE IN-CYLINDER ENGINE TECHNOLOGY MUST NOT PERMIT UNFILTERED EXHAUST GAS TO BE INTRODUCED INTO THE COMBUSTION CYLINDER. EMISSIONS REQUIREMENTS / CERTIFICATIONS OF THIS PACKAGE: EPA TIER 3

2.1.3.1 ENGINE GOVERNING

THE ENGINE WILL BE EQUIPPED WITH AN ISOCHRONOUS ELECTRONIC GOVERNOR TO MAINTAIN +/- 0.25% STEADY STATE FREQUENCY VARIATION FROM STEADY STATE NO LOAD TO STEADY STATE FULL LOAD.

2.2 GENERATOR

2.2.1 GENERATOR SPECIFICATIONS

THE SYNCHRONOUS THREE PHASE GENERATOR SHALL BE A SINGLE BEARING, SELF-VENTILATED, DRIP-PROOF DESIGN IN ACCORDANCE WITH NEMA MG 1 AND DIRECTLY CONNECTED TO THE ENGINE FLYWHEEL HOUSING WITH A FLEX COUPLING. THE GENERATOR SHALL MEET PERFORMANCE CLASS G2 OF ISO 8528. THE EXCITATION SYSTEM SHALL ENABLE THE ALTERNATOR TO SUSTAIN 300% (250% FOR 50HZ) OF RATED CURRENT BASED ON THE 125C (CLASS H) OR 105C (CLASS F) RISE RATING FOR TEN SECONDS DURING A FAULT CONDITION AND SHALL IMPROVE THE IMMUNITY OF THE VOLTAGE REGULATOR TO NON-LINEAR DISTORTING LOADS. THE EXCITATION SYSTEM SHALL BE OF BRUSHLESS CONSTRUCTION AND BE INDEPENDENT OF MAIN STATOR WINDINGS, PERMANENT MAGNET.

2.2.2 VOLTAGE REGULATOR

2.2.2.1 AUTOMATIC VOLTAGE REGULATOR

THE AUTOMATIC VOLTAGE REGULATOR (AVR) SHALL MAINTAIN GENERATOR OUTPUT VOLTAGE WITHIN +/- 0.5% FOR ANY CONSTANT LOAD BETWEEN NO LOAD AND FULL LOAD. THE REGULATOR SHALL BE A TOTALLY SOLID STATE DESIGN, WHICH INCLUDES ELECTRONIC VOLTAGE BUILDUP, VOLTS PER HERTZ REGULATION, OVER-EXCITATION PROTECTION, SHALL LIMIT VOLTAGE OVERSHOOT ON STARTUP, AND SHALL BE ENVIRONMENTALLY SEALED.

2.2.3 MOTOR STARTING

PROVIDE LOCKED ROTOR MOTOR STARTING CAPABILITY OF 33.5 SKVA AT 20% INSTANTANEOUS VOLTAGE DIP AS DEFINED PER NEMA MG 1. SUSTAINED VOLTAGE DIP DATA IS NOT ACCEPTABLE.

2.3 CIRCUIT BREAKER

2.3.1 CIRCUIT BREAKER SPECIFICATIONS

PROVIDE A GENERATOR MOUNTED 100% CIRCUIT BREAKER, MOLDED CASE, QTY. (1) 60 AMP TRIP, 3 POLE, NEMA 1/IP22. BREAKER SHALL UTILIZE A SOLID STATE TRIP UNIT. THE BREAKER SHALL BE UL/CSA LISTED OF IEC CONSTRUCTION AND CONNECTED TO ENGINE/GENERATOR SAFETY SHUTDOWNS. BREAKER SHALL BE HOUSED IN AN EXTENSION TERMINAL BOX WHICH IS ISOLATED FROM VIBRATIONS INDUCED BY THE GENERATOR SET. MECHANICAL TYPE LUGS, SIZED FOR THE CIRCUIT BREAKER FEEDERS SHOWN ON DRAWING, SHALL BE SUPPLIED ON THE LOAD SIDE OF BREAKER.

2.4 CONTROLS - GENERATOR SET MOUNTED

PROVIDE A FULLY SOLID-STATE, MICROPROCESSOR BASED, GENERATOR SET CONTROL. THE CONTROL PANEL SHALL BE DESIGNED AND BUILT BY THE ENGINE MANUFACTURER. THE CONTROL SHALL PROVIDE ALL OPERATING, MONITORING, AND CONTROL FUNCTIONS FOR THE GENERATOR SET. THE CONTROL PANEL SHALL PROVIDE REAL TIME DIGITAL COMMUNICATIONS TO ALL ENGINE AND REGULATOR CONTROLS.

2.4.1 ENVIRONMENTAL

THE GENERATOR SET CONTROL SHALL BE TESTED AND CERTIFIED TO THE FOLLOWING ENVIRONMENTAL CONDITIONS.

1. -40°C TO +70C OPERATING RANGE
2. 95% HUMIDITY NON-CONDENSING, 30C TO 60C
3. IP22 PROTECTION FOR REAR OF CONTROLLER; IP55 WHEN INSTALLED IN CONTROL PANEL
4. 5% SALT SPRAY, 48 HOURS, +38C, 36.8V SYSTEM VOLTAGE
5. SINUSOIDAL VIBRATION 4.3G'S RMS, 24-1000HZ
6. ELECTROMAGNETIC CAPABILITY (89/336/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, BS EN 50081-2, 50082-2)
7. SHOCK: WITHSTAND 15G

2.4.2 FUNCTIONAL REQUIREMENTS

THE FOLLOWING FUNCTIONALITY SHALL BE INTEGRAL TO THE CONTROL PANEL.

1. THE CONTROL SHALL INCLUDE A 33 X 132 PIXEL, 24MM X 95MM, POSITIVE IMAGE, TRANSFLECTIVE LCD DISPLAY WITH TEXT BASED ALARM/EVENT DESCRIPTIONS.
2. AUDIBLE HORN FOR ALARM AND SHUTDOWN WITH HORN SILENCE SWITCH
3. STANDARD ISO LABELING
4. MULTIPLE LANGUAGE CAPABILITY
5. REMOTE START/STOP CONTROL
6. LOCAL RUN/OFF/AUTO CONTROL INTEGRAL TO SYSTEM MICROPROCESSOR
7. COOLDOWN TIMER
8. SPEED ADJUST
9. LAMP TEST
10. PUSH BUTTON EMERGENCY STOP BUTTON
11. PASSWORD PROTECTED SYSTEM PROGRAMMING

2.4.3 DIGITAL MONITORING CAPABILITY

THE CONTROLS SHALL PROVIDE THE FOLLOWING DIGITAL READOUTS FOR THE ENGINE AND GENERATOR.
ALL READINGS SHALL BE INDICATED IN EITHER METRIC OR ENGLISH UNITS

ENGINE

1. ENGINE OIL PRESSURE
2. ENGINE OIL TEMPERATURE
3. ENGINE COOLANT TEMPERATURE
4. ENGINE RPM
5. BATTERY VOLTS

GENERATOR

1. GENERATOR AC VOLTS (LINE TO LINE, LINE TO NEUTRAL AND AVERAGE)
2. GENERATOR AC CURRENT (AVG AND PER PHASE)
3. GENERATOR AC FREQUENCY
4. GENERATOR KW (TOTAL AND PER PHASE)
5. GENERATOR KVA (TOTAL AND PER PHASE)
6. GENERATOR KVAR (TOTAL AND PER PHASE)
7. POWER FACTOR (AVG AND PER PHASE)
8. TOTAL KW-HR
9. TOTAL KVAR-HR
10. % KW
11. % KVA
12. % KVAR

2.4.4 ALARMS AND SHUTDOWNS

THE CONTROL SHALL MONITOR AND PROVIDE ALARM INDICATION AND SUBSEQUENT SHUTDOWN FOR THE FOLLOWING CONDITIONS. ALL ALARMS AND SHUTDOWNS ARE ACCOMPANIED BY A TIME, DATE, AND ENGINE HOUR STAMP THAT ARE STORED BY THE CONTROL PANEL FOR FIRST AND LAST OCCURRENCE:

ENGINE ALARM/SHUTDOWN

1. LOW OIL PRESSURE ALARM/SHUTDOWN
2. HIGH COOLANT TEMPERATURE ALARM/SHUTDOWN
3. LOSS OF COOLANT SHUTDOWN
4. OVERSPEED SHUTDOWN
5. OVERCRANK SHUTDOWN
6. LOW COOLANT LEVEL ALARM
7. LOW FUEL LEVEL ALARM
8. EMERGENCY STOP DEPRESSED SHUTDOWN
9. LOW COOLANT TEMPERATURE ALARM
10. LOW BATTERY VOLTAGE ALARM
11. HIGH BATTERY VOLTAGE ALARM
12. CONTROL SWITCH NOT IN AUTO POSITION ALARM
13. BATTERY CHARGER FAILURE ALARM

GENERATOR ALARM/SHUTDOWN

1. GENERATOR OVER VOLTAGE
2. GENERATOR UNDER VOLTAGE
3. GENERATOR OVER FREQUENCY
4. GENERATOR UNDER FREQUENCY
5. GENERATOR REVERSE POWER
6. GENERATOR OVERCURRENT

2.4.5 INPUTS AND OUTPUTS

PROGRAMMABLE DIGITAL INPUTS
THE CONTROLLER SHALL INCLUDE THE ABILITY TO ACCEPT SIX (6) DIGITAL INPUT SIGNALS. THE SIGNALS MAY BE PROGRAMMED FOR EITHER HIGH OR LOW ACTIVATION USING PROGRAMMABLE NORMALLY OPEN OR NORMALLY CLOSED CONTACTS.

DIGITAL OUTPUTS
THE CONTROL SHALL INCLUDE THE ABILITY TO OPERATE SIX (6) PROGRAMMABLE RELAY OUTPUT SIGNALS, INTEGRAL TO THE CONTROLLER. THE OUTPUT RELAYS SHALL BE RATED FOR 2A @ 30VDC.

DISCRETE OUTPUTS
THE CONTROL SHALL INCLUDE THE ABILITY TO OPERATE ONE (1) DISCRETE OUTPUTS, INTEGRAL TO THE CONTROLLER, WHICH ARE CAPABLE OF SINKING UP TO 300MA.

2.4.6 MAINTENANCE

ALL ENGINE, VOLTAGE REGULATOR, CONTROL PANEL AND ACCESSORY UNITS SHALL BE ACCESSIBLE THROUGH A SINGLE ELECTRONIC SERVICE TOOL. THE FOLLOWING MAINTENANCE FUNCTIONALITY SHALL BE INTEGRAL TO THE GENERATOR SET CONTROL:

1. ENGINE RUNNING HOURS DISPLAY
2. SERVICE MAINTENANCE INTERVAL (RUNNING HOURS OR CALENDAR DAYS)
3. ENGINE CRANK ATTEMPT COUNTER
4. ENGINE SUCCESSFUL STARTS COUNTER
5. 20 EVENTS ARE STORED IN CONTROL PANEL MEMORY
6. PROGRAMMABLE CYCLE TIMER THAT STARTS AND RUNS THE GENERATOR FOR A PREDETERMINED TIME. THE TIMER SHALL USE 14 USER-PROGRAMMABLE SEQUENCES THAT ARE REPEATED IN A 7-DAY CYCLE. EACH SEQUENCE SHALL HAVE THE FOLLOWING PROGRAMMABLE SET POINTS:

A. DAY OF WEEK
B. TIME OF DAY TO START
C. DURATION OF CYCLE

2.4.7 LOCAL AND REMOTE COMMUNICATIONS

REMOTE COMMUNICATIONS
THE CONTROL SHALL INCLUDE MODBUS RTU COMMUNICATIONS AS STANDARD VIA RS-485 HALF DUPLEX WITH CONFIGURABLE BAUD RATES FROM 2.4K TO 57.6K.

REMOTE ANNUNCIATOR (NFPA 99/110, CSA 282)
PROVIDE A REMOTE ANNUNCIATOR TO MEET THE REQUIREMENTS OF NFPA 110, LEVEL 1.

1. THE ANNUNCIATOR SHALL PROVIDE REMOTE ANNUNCIATION OF ALL POINTS STATED ABOVE AND SHALL INCORPORATE RING-BACK CAPABILITY SO THAT AFTER SILENCING THE INITIAL ALARM, ANY SUBSEQUENT ALARMS WILL SOUND THE HORN.

ABILITY TO BE LOCATED UP TO 800 FT FROM THE GENERATOR SET

REMOTE MONITORING SOFTWARE
THE CONTROL SHALL PROVIDE MONITORING SOFTWARE WITH THE FOLLOWING FUNCTIONALITY:

1. PROVIDE ACCESS TO ALL DATE AND EVENTS ON GENERATOR SET COMMUNICATIONS NETWORK
2. PROVIDE REMOTE CONTROL CAPABILITY FOR THE GENERATOR SET
3. ABILITY TO MONITOR UP TO 12 GENERATOR SETS
4. ABILITY TO COMMUNICATE VIA MODBUS RTU OR REMOTE MODEM

2.5 COOLING SYSTEM

THE GENERATOR SET SHALL BE EQUIPPED WITH A RAIL-MOUNTED, ENGINE-DRIVEN RADIATOR WITH BLOWER FAN AND ALL ACCESSORIES. THE COOLING SYSTEM SHALL BE SIZED TO OPERATE AT FULL LOAD CONDITIONS AND 110 F* AMBIENT AIR ENTERING THE ROOM OR ENCLOSURE (IF AN ENCLOSURE IS SPECIFIED). THE GENERATOR SET SUPPLIER IS RESPONSIBLE FOR PROVIDING A PROPERLY SIZED COOLING SYSTEM BASED ON THE ENCLOSURE STATIC PRESSURE RESTRICTION.

2.6 FUEL SYSTEM

2.6.1 FUEL SYSTEM (PROPANE)

THE FUEL SYSTEM SHALL BE EXTERIOR TO THE ENGINE. A FUEL LINE SHALL BE PLUMBED TO THE 500 GALLON PROPANE TANK FOR EASE OF CUSTOMER CONNECTION. A SECONDARY GAS PRESSURE REGULATOR SHALL BE INSTALLED INTEGRAL TO THE GENERATOR SET PACKAGE CAPABLE OF REGULATING THE INCOMING PROPANE PRESSURE FROM 0.5 PSI (34 MBAR) TO A LEVEL SUITABLE FOR THE ENGINE FUEL SYSTEM.

2.7 EXHAUST SYSTEM

2.7.1 SILENCER

A CRITICAL GRADE SILENCER, COMPANION FLANGES, AND FLEXIBLE EXHAUST FITTING PROPERLY SIZED SHALL BE FURNISHED AND INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION. MOUNTING SHALL BE PROVIDED BY THE CONTRACTOR AS SHOWN ON THE DRAWINGS (INDOOR INSTALLATIONS ONLY). THE SILENCER SHALL BE MOUNTED SO THAT ITS WEIGHT IS NOT SUPPORTED BY THE ENGINE NOR WILL EXHAUST SYSTEM GROWTH DUE TO THERMAL EXPANSION BE IMPOSED ON THE ENGINE. EXHAUST PIPE SIZE SHALL BE SUFFICIENT TO ENSURE THAT EXHAUST BACKPRESSURE DOES NOT EXCEED THE MAXIMUM LIMITATIONS SPECIFIED BY THE ENGINE MANUFACTURER.

2.8 STARTING SYSTEM

2.8.1 STARTING MOTOR

A DC ELECTRIC STARTING SYSTEM WITH POSITIVE ENGAGEMENT SHALL BE FURNISHED. THE MOTOR VOLTAGE SHALL BE AS RECOMMENDED BY THE ENGINE MANUFACTURER.

2.8.2 JACKET WATER HEATER

JACKET WATER HEATER SHALL BE PROVIDED AND SHALL BE SIZED TO INSURE THAT GENSET WILL START WITHIN THE SPECIFIED TIME PERIOD AND AMBIENT CONDITIONS.

2.8.3 BATTERIES

BATTERIES – A LEAD-ACID STORAGE BATTERY SET OF THE HEAVY-DUTY STARTING TYPE SHALL BE PROVIDED. BATTERY VOLTAGE SHALL BE COMPATIBLE WITH THE STARTING SYSTEM. THE BATTERIES SUPPLIED SHALL MEET NFPA 110 CRANKING REQUIREMENTS OF 90 SECONDS MINIMUM OF TOTAL CRANKING TIME. BATTERY SPECIFICATIONS (TYPE, AMP-HOUR RATING, COLD CRANKING AMPS) TO BE PROVIDED IN THE SUBMITTAL.

2.8.4 BATTERY CHARGER

BATTERY CHARGER – A CURRENT LIMITING BATTERY CHARGER SHALL BE FURNISHED TO AUTOMATICALLY RECHARGE BATTERIES. THE CHARGER SHALL BE DUAL CHARGE RATE WITH AUTOMATIC SWITCHING TO THE BOOST RATE WHEN REQUIRED. THE BATTERY CHARGER SHALL BE MOUNTED ON THE GENSET PACKAGE OR INSIDE THE GENSET ENCLOSURE/ROOM.

THIS RECORD DOCUMENT HAS BEEN PREPARED BASED IN PART UPON INFORMATION FURNISHED BY OTHERS. THE DESIGN PROFESSIONAL CANNOT ASSURE THE ACCURACY OF OTHERS INFORMATION AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS RECORD DOCUMENT OR FOR ANY ERROR OR OMISSION THAT MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF IT'S ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.

E1.2

THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

THIS DRAWING IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF STEVE L. KANETZKY, P.E. TX #84696 ON 02/05/19. IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

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PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

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REVISIONS

NO	DATE - DESCRIPTION

EDITED: Oct 03, 2016
PLOTTED: ----
PLOTTED BY: Gary Brubaker

CRESCENT BELTERRA SECTION 21-2

GENERATOR / ATS SPECIFICATIONS

XX OF X

2.9 ENCLOSURE

2.9.1 SOUND ATTENUATED ENCLOSURE

THE COMPLETE PROPANE ENGINE GENERATOR SET, INCLUDING GENERATOR CONTROL PANEL AND ENGINE STARTING BATTERIES, SHALL BE ENCLOSED IN A FACTORY ASSEMBLED, SOUND ATTENUATED ENCLOSURE.

1. A WEATHER RESISTANT, SOUND ATTENUATED ENCLOSURE OF STEEL WITH ELECTROSTATICALLY APPLIED POWDER COATED BAKED POLYESTER PAINT. THE ENCLOSURE SHALL HAVE A RESULTING SOUND LEVEL OF 75 DBA @ 23 FT WITH THE GENSET RUNNING UNDER FULL LOAD. IT SHALL CONSIST OF A ROOF, SIDE WALLS, AND END WALLS. FASTENERS SHALL BE EITHER ZINC PLATED OR STAINLESS STEEL.
2. ENCLOSURE SOUND ATTENUATION: ACOUSTICAL FOAM SHALL BE PROVIDED BETWEEN ALL SUPPORTS AND INSIDE DOORS AND SOUND BAFFLES ON AIR INTAKE AND AIR DISCHARGE.

3 EXECUTION

3.1 INSTALLATION

INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, THE PROJECT DRAWINGS AND SPECIFICATIONS, AND ALL APPLICABLE CODES.

3.2 START-UP AND TESTING

COORDINATE ALL START–UP AND TESTING ACTIVITIES WITH THE ENGINEER AND OWNER. AFTER INSTALLATION IS COMPLETE AND NORMAL POWER IS AVAILABLE, THE MANUFACTURER'S LOCAL DEALER SHALL PERFORM THE FOLLOWING:

NFPA 110 LOAD TEST REQS

1. VERIFY THAT THE EQUIPMENT IS INSTALLED PROPERLY.
2. CHECK ALL AUXILIARY DEVICES FOR PROPER OPERATION, INCLUDING BATTERY CHARGER, JACKET WATER HEATER(S), GENERATOR SPACE HEATER, REMOTE ANNUNCIATOR, ETC.
3. TEST ALL ALARMS AND SAFETY SHUTDOWN DEVICES FOR PROPER OPERATION AND ANNUNCIATION.
4. CHECK ALL FLUID LEVELS.
5. START ENGINE AND CHECK FOR EXHAUST, OIL, FUEL LEAKS, VIBRATIONS, ETC.
6. VERIFY PROPER VOLTAGE AND PHASE ROTATION AT THE TRANSFER SWITCH BEFORE CONNECTING TO THE LOAD.
7. CONNECT THE GENERATOR TO BUILDING LOAD AND VERIFY THAT THE GENERATOR WILL START AND RUN ALL DESIGNATED LOADS.
8. THE SYSTEM SHALL BE TESTED UNDER FULL LOAD AND MONITOR THE FOLLOWING READINGS:

OIL PRESSURE
COOLANT TEMPERATURE
BATTERY CHARGE RATE
AC VOLTS
AC AMPERES– ALL PHASES
FREQUENCY
KILOWATTS
AMBIENT TEMPERATURE

3.3 OPERATION AND MAINTENANCE MANUALS

PROVIDE TWO (2) SETS OF OPERATION AND MAINTENANCE MANUALS COVERING THE GENERATOR, SWITCHGEAR, AND AUXILIARY COMPONENTS. INCLUDE FINAL AS–BUILT WIRING INTERCONNECT DIAGRAMS AND RECOMMENDED PREVENTATIVE MAINTENANCE SCHEDULES.

3.4 TRAINING

3.4.1 ON-SITE TRAINING

PROVIDE ON–SITE TRAINING TO INSTRUCT THE OWNER'S PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF THE EQUIPMENT. REVIEW OPERATION AND MAINTENANCE MANUALS, PARTS MANUALS, AND EMERGENCY SERVICE PROCEDURES.

AUTOMATIC TRANSFER SWITCH 60 AMP, 4 POLE, NEMA 4XSS

1 GENERAL

1.1 SCOPE

A. IT IS THE INTENT OF THIS SPECIFICATION TO SECURE A TRANSFER SWITCH THAT HAS BEEN PROTOTYPE TESTED, FACTORY BUILT, PRODUCTION TESTED AND SITE TESTED. A TRANSFER SWITCH WITH THE NUMBER OF POLES, VOLTAGE AND CURRENT RATINGS SHOWN ON THE PLANS AND SPECIFIED HEREIN SHALL BE PROVIDED.

1.2 CODES AND STANDARDS

A. THE AUTOMATIC TRANSFER SWITCH SHALL CONFORM TO THE REQUIREMENTS OF:

1. UL 1008: UNDERWRITERS LABORATORIES STANDARD FOR AUTOMATIC TRANSFER SWITCHES
2. CSA: C22.2 NO. 178 CERTIFIED
3. IEC: 947–6–1 CERTIFIED AT 480 VAC
4. NFPA 70: NATIONAL ELECTRICAL CODE INCLUDING USE IN EMERGENCY AND STANDBY SYSTEMS IN ACCORDANCE WITH ARTICLES 517, 700, 701, 702
5. NFPA 99: ESSENTIAL ELECTRICAL SYSTEMS FOR HEALTH CARE FACILITIES
6. NFPA 101: LIFE SAFETY CODE
7. NFPA 110: STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS
8. IEEE 241: I.E.E.E. RECOMMENDED PRACTICE FOR ELECTRICAL POWER SYSTEMS IN COMMERCIAL BUILDINGS
9. IEEE 446: I.E.E.E. RECOMMENDED PRACTICE FOR EMERGENCY AND STANDBY POWER SYSTEMS
10. NEMA ICS10: AC AUTOMATIC TRANSFER SWITCH EQUIPMENT
11. UL 50/508: ENCLOSURES
12. ICS 6: ENCLOSURES
13. ANSI C33.76: ENCLOSURES
14. NEMA 250: ENCLOSURES
15. IEEE 472: (ANSI C37.90A): RINGING WAVE IMMUNITY
16. EN55022 (CISPR11): CONDUCTED AND RADIATED EMISSIONS (EXCEEDS EN55011 & MILSTD 461 CLASS 3)
17. EN61000–4–2: (LEVEL 4): ESD IMMUNITY TEST CLASS B:
18. EN61000–4–3: (ENV50140): RADIATED RF, ELECTROMAGNETIC FIELD IMMUNITY
19. EN61000–4–4: ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST
20. EN61000–4–5: IEEE C62.41: SURGE IMMUNITY TEST (1.2 X 50__S, 5 & 8 KV)
21. EN61000–4–6: (ENV50141): CONDUCTED IMMUNITY TEST
22. EN61000–4–11: VOLTAGE DIPS AND INTERRUPTION IMMUNITY
23. IEE–693–2005: SEISMIC CERTIFIED AT HIGH LEVEL WITH 2.5 AMPLIFICATION FACTOR
24. IBC–2003: AT IP=1.5 FOR Z/H LESS THAN OR EQUAL TO (IN ACCORDANCE WITH ICC–ES–AC156)

1.3 APPROVED MANUFACTURES

A. THE AUTOMATIC TRANSFER SWITCH SHALL BE SUPPLIED BY:

- ASCO®
- GE ZENITH®
- RUSSELECTRIC®

OR BY ALTERNATE MANUFACTURES WHO SHALL SUBMIT A REQUEST ONE WEEK PRIOR TO BID AND INCLUDE A WRITTEN LIST OF DEVIATIONS FROM THIS SPECIFICATION TO BE CONSIDERED FOR APPROVAL.

2 PRODUCTS

2.1 PERFORMANCE AND CONSTRUCTION

A. THE AUTOMATIC TRANSFER SWITCH SHALL BE OF DOUBLE THROW CONSTRUCTION OPERATED BY A RELIABLE SOLENOID DRIVEN MECHANISM. THERE SHALL BE A DIRECT MECHANICAL COUPLING TO FACILITATE TRANSFER IN 6 CYCLES OR LESS.

B. THE TRANSFER SWITCH SHALL INCORPORATE A TIMED, CENTER–OFF OR NEUTRAL POSITION FOR MOTOR AND INDUCTIVE LOAD DECAY. TRANSFER TIME SHALL BE ADJUSTABLE FROM 0–10 MINUTES TO EITHER SOURCE. A MECHANICAL INTERLOCK SHALL BE PROVIDED TO ENSURE THAT BOTH SETS OF CONTACTS CANNOT BE CLOSED AT THE SAME TIME.

C. FOR SWITCHES INSTALLED IN SYSTEMS HAVING GROUND FAULT PROTECTIVE DEVICES, AND/OR WIRED SO AS TO BE DESIGNATED A SEPARATELY DERIVED SYSTEM BY THE NEC, A 4TH POLE SHALL BE PROVIDED. THIS ADDITIONAL POLE SHALL ISOLATE THE NORMAL AND EMERGENCY NEUTRALS. THE NEUTRAL POLE SHALL HAVE THE SAME WITHSTAND AND OPERATIONAL RATINGS AS THE OTHER POLES AND SHALL BE ARRANGED TO BREAK LAST AND MAKE FIRST TO MINIMIZE NEUTRAL SWITCHING TRANSIENTS. ADD–ON OR ACCESSORY POLES THAT ARE NOT OF IDENTICAL CONSTRUCTION AND WITHSTAND CAPABILITY WILL NOT BE CONSIDERED.

D. THE CONTACT STRUCTURE SHALL CONSIST OF A MAIN CURRENT CARRYING CONTACT, WHICH IS A SILVER ALLOY WITH A MINIMUM OF 50% SILVER CONTENT. THE CURRENT CARRYING CONTACTS SHALL BE PROTECTED BY SILVER TUNGSTEN ARCING CONTACTS ON ALL SIZES ABOVE 400 AMPS.

E. THE TRANSFER SWITCH MANUFACTURER SHALL SUBMIT TEST DATA FOR EACH SIZE SWITCH, SHOWING IT CAN WITHSTAND FAULT CURRENTS OF THE MAGNITUDE AND THE DURATION NECESSARY TO MAINTAIN THE SYSTEM INTEGRITY. MINIMUM UL LISTED WITHSTAND AND CLOSE INTO FAULT RATINGS SHALL BE AS FOLLOWS:

SIZE (AMPS)	COORDINATED BREAKER	CURRENT LIMITING FUSE
40 – 600	50,000	200,000
800	65,000	200,000
1000 – 1200	85,000	200,000
1600 – 3000	100,000	200,000

F. A DIELECTRIC TEST AT THE CONCLUSION OF THE WITHSTAND AND CLOSING TESTS SHALL BE PERFORMED.

G. THE AUTOMATIC TRANSFER SWITCH MANUFACTURER SHALL CERTIFY SUFFICIENT ARC INTERRUPTING CAPABILITIES FOR 50 CYCLES OF OPERATION BETWEEN A NORMAL AND EMERGENCY SOURCE THAT ARE 120 DEGREES OUT OF PHASE AT 480 VOLTS, 600% OF RATED CURRENT AT .50 POWER FACTOR. THIS CERTIFICATION IS TO ENSURE THAT THERE WILL BE NO CURRENT FLOW BETWEEN THE TWO ISOLATED SOURCES DURING SWITCHING.

H. ALL RELAYS SHALL BE CONTINUOUS DUTY INDUSTRIAL TYPE WITH WIPING CONTACTS. COILS, RELAYS, TIMERS AND ACCESSORIES SHALL BE READILY FRONT ACCESSIBLE. THE CONTROL PANEL AND POWER SECTION SHALL BE INTERCONNECTED WITH A HARNESS AND KEYED DISCONNECT PLUGS FOR MAINTENANCE.

I. MAIN AND ARCING CONTACTS SHALL BE VISIBLE WITHOUT MAJOR DISASSEMBLY TO FACILITATE INSPECTION AND MAINTENANCE.

J. A MANUAL HANDLE SHALL BE PROVIDED FOR MAINTENANCE PURPOSES WITH THE SWITCH DE–ENERGIZED. AN OPERATOR DISCONNECT SWITCH SHALL BE PROVIDED TO DEFEAT AUTOMATIC OPERATION DURING MAINTENANCE, INSPECTION OR MANUAL OPERATION.

K. SWITCHES COMPOSED OF MOLDED CASE BREAKERS, LIGHTING CONTACTORS OR COMPONENTS THEREOF WILL NOT BE ACCEPTABLE.

L. THE CURRENT RATING SHALL BE A CONTINUOUS RATING WHEN THE SWITCH IS INSTALLED IN AN ENCLOSURE, AND SHALL CONFORM TO NEMA TEMPERATURE RISE STANDARDS.

M. THE UNIT SHALL BE RATED BASED ON ALL CLASSES OF LOADS, I.E., RESISTIVE, TUNGSTEN, BALLAST AND INDUCTIVE LOADS. SWITCHES RATED 400 AMPERES OR LESS SHALL BE UL LISTED FOR 100% TUNGSTEN LAMP LOAD.

N. TEMPERATURE RISE TESTS IN ACCORDANCE WITH UL 1008 SHALL HAVE BEEN CONDUCTED AFTER THE OVERLOAD AND ENDURANCE TESTS TO CONFIRM THE ABILITY OF THE UNITS TO CARRY THEIR RATED CURRENTS WITHIN THE ALLOWABLE TEMPERATURE LIMITS.

O. UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS, THE SWITCH SHALL BE MOUNTED IN A NEMA 1 ENCLOSURE.

2.2 CONTROL

A. THE CONTROL PANEL SHALL BE OPTO–ISOLATED FROM ELECTRICAL NOISE AND PROVIDED WITH THE FOLLOWING INHERENT CONTROL FUNCTIONS AND CAPABILITIES:

1. EASY–TO–VIEW 4X20 LCD DISPLAY WITH LONG LASTING LED INDICATORS.
2. CONTROL PANEL SHALL DISPLAY VOLTAGE AND FREQUENCY OF BOTH SOURCES.
3. THE USER SHALL BE ABLE TO VIEW THE LAST 16 RECORDED EVENTS.
4. CAPABILITY FOR EXTERNAL COMMUNICATION AND NETWORK INTERFACE.
5. ADJUSTMENTS TO ALL SETTINGS SHALL BE MADE FROM THE FRONT OF THE PANEL WITHOUT OPENING THE DOOR.

B. THE TRANSFER SWITCH SHALL BE EQUIPPED WITH A MICROPROCESSOR BASED CONTROL PANEL. THE CONTROL PANEL SHALL PERFORM THE OPERATIONAL AND DISPLAY FUNCTIONS OF THE TRANSFER SWITCH. THE DISPLAY FUNCTIONS OF THE CONTROL PANEL SHALL INCLUDE ATS POSITION, SOURCE AVAILABILITY, SEQUENCE INDICATION AND DIAGNOSTICS.

C. ALL PROGRAMMABLE AND CONTROL FUNCTIONS SHALL BE PASS CODE PROTECTED AND ACCESSIBLE THROUGH THE KEYPAD.

D. THE CONTROL PANEL SHALL BE PROVIDED WITH A SIMPLE USER INTERFACE FOR TRANSFER SWITCH MONITORING, CONTROL AND FIELD CHANGEABLE FUNCTIONS AND SETTINGS.

E. TOUCH PAD TEST SWITCH WITH FAST TEST/LOAD/NO LOAD SELECTION CAPABILITY TO SIMULATE A NORMAL SOURCE FAILURE.

F. THE CONTROLLER SHALL PROVIDE DIGITAL TIMER ADJUSTMENTS WITH 1–SECOND RESOLUTION. VOLTAGE AND FREQUENCY SHALL BE ADJUSTABLE TO 1% RESOLUTION TO FACILITATE ACCURATE TRANSFER.

G. TO ENSURE RELIABLE AND CONSISTENT USER OPERATION THE CONTROLS MUST BE EQUIPPED WITH NONVOLATILE MEMORY AND ALLOW AUTOMATIC DAYLIGHT SAVINGS TIME ADJUSTMENT.

3 OPERATION

3.1 SEQUENCE OF OPERATION

A. THE ATS SHALL INCORPORATE ADJUSTABLE THREE PHASE UNDER VOLTAGE SENSING ON THE NORMAL SOURCE.

B. WHEN THE VOLTAGE OF ANY PHASE OF THE NORMAL SOURCE IS REDUCED TO 80% OF NOMINAL VOLTAGE, FOR A PERIOD OF 0–10 SECONDS (PROGRAMMABLE) A PILOT CONTACT SHALL CLOSE TO INITIATE STARTING OF THE ENGINE GENERATOR.

C. THE ATS SHALL INCORPORATE ADJUSTABLE UNDER VOLTAGE AND UNDER FREQUENCY SENSING ON THE EMERGENCY SOURCE. IN ADDITION, THE SWITCH WILL BE PROVIDED WITH A CENTER–OFF OR NEUTRAL POSITION

D. WHEN THE EMERGENCY SOURCE HAS REACHED A VOLTAGE VALUE OF 90% NOMINAL, ACHIEVED FREQUENCY WITHIN 95% OF THE RATED VALUE AND HAS REACHED THE END OF THE ADJUSTABLE DELAY, THE LOAD SHALL BE TRANSFERRED TO THE NEUTRAL POSITION FOR AN ADJUSTABLE TIME PERIOD OF 0–10 MINUTES. UPON COMPLETION OF THIS NEUTRAL TIME DELAY THE SWITCH SHALL BE TRANSFERRED TO THE EMERGENCY SOURCE.

E. WHEN THE NORMAL SOURCE HAS BEEN RESTORED TO NOT LESS THAN 90% OF RATED VOLTAGE ON ALL PHASES AND THE TIME DELAY TRANSFER TO NORMAL HAS EXPIRED, THE LOAD SHALL BE RETRANSFERRED TO THE NEUTRAL POSITION FOR AN ADJUSTABLE TIME PERIOD OF 0–10 MINUTES. AFTER WHICH THE SWITCH SHALL BE CONNECTED TO THE NORMAL SOURCE. THE GENERATOR SHALL RUN UNLOADED FOR 5 MINUTES (PROGRAMMABLE) AND THEN AUTOMATICALLY SHUT DOWN. THE GENERATOR SHALL BE READY FOR AUTOMATIC OPERATION UPON THE NEXT FAILURE OF THE NORMAL SOURCE.

F. IF THE ENGINE GENERATOR SHOULD FAIL WHILE CARRYING THE LOAD, RETRANSFER TO THE NORMAL SOURCE SHALL BE MADE INSTANTANEOUSLY UPON RESTORATION OF PROPER VOLTAGE (90%) ON THE NORMAL SOURCE.

G. INSPECTION AND OPERATIONAL TESTING/DEMONSTATION OF THE ATS SHALL BE CONDUCTED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE TO INDICATE THE ATS SATISFIES THESE SPECIFICATIONS.

3.2 STANDARD ACCESSORIES

A. ADJUSTABLE TIME DELAY TO OVERRIDE MOMENTARY NORMAL SOURCE FAILURE PRIOR TO ENGINE START. FIELD PROGRAMMABLE 0–10 SECONDS FACTORY SET AT 3 SECONDS.

B. ADJUSTABLE TIME DELAY ON RETRANSFER TO NORMAL SOURCE, PROGRAMMABLE 0–60 MINUTES FACTORY SET AT 30 MINUTES. IF THE EMERGENCY SOURCE FAILS DURING THE RETRANSFER TIME DELAY, THE TRANSFER SWITCH CONTROLS SHALL AUTOMATICALLY BYPASS THE TIME DELAY AND IMMEDIATELY RETRANSFER TO THE NORMAL POSITION.

C. A TIME DELAY ON TRANSFER TO EMERGENCY, PROGRAMMABLE 0–5 MINUTES, FACTORY SET AT 1 SECOND.

D. A TIME DELAY AND CONTROL PANEL DISPLAY ON TRANSFER TO EITHER SOURCE WITH A CENTER–OFF POSITION, PROGRAMMABLE 0–10 MINUTES, AND FACTORY SET AT 5 SECONDS.

E. AN IN–PHASE MONITOR SHALL BE PROVIDED. THE MONITOR SHALL COMPARE THE PHASE ANGLE DIFFERENCE BETWEEN THE NORMAL AND EMERGENCY SOURCES AND BE PROGRAMMED TO ANTICIPATE THE ZERO CROSSING POINT TO MINIMIZE SWITCHING TRANSIENTS.

F. AN EXERCISER TIMER WITH MOMENTARY TEST PUSHBUTTON SHALL BE INCORPORATED WITHIN THE MICROPROCESSOR AND SHALL BE CAPABLE OF STARTING THE ENGINE GENERATOR SET AND TRANSFERRING THE LOAD (WHEN SELECTED) FOR EXERCISE PURPOSES ON A DAILY, WEEKLY OR MONTHLY BASIS. THE EXERCISER SHALL CONTAIN A BATTERY FOR MEMORY RETENTION DURING AN OUTAGE.

G. PROVIDE A MOMENTARY PUSHBUTTON TO BYPASS THE TIME DELAYS ON TRANSFER AND RETRANSFER AND PROGRAMMABLE COMMIT/NO COMMIT CONTROL LOGIC.

H. THE CONTROLLER SHALL ACCEPT A REMOTE PEAK SHAVE OR TEST INPUT TO SIGNAL THE TRANSFER SWITCH TO THE EMERGENCY POSITION.

I. A SET OF CUSTOMER CONTACTS SHALL BE PROVIDED TO INDICATE BOTH EMERGENCY AND NORMAL SOURCE POSITION.

J. ADDITIONAL AUXILIARY CONTACTS (A3) – CLOSED WHEN THE TRANSFER SWITCH IS IN SOURCE 2 POSITION.

K. ADDITIONAL AUXILIARY CONTACTS (A4) – CLOSED WHEN THE TRANSFER SWITCH IS IN SOURCE 1 POSITION.

4 EXECUTION

4.1 GENERAL

A. THE TRANSFER SWITCH SHALL BE INSTALLED AS SHOWN ON THE PLANS, IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS AND ALL APPLICABLE CODES.

4.2 FACTORY TESTS

A. THE TRANSFER SWITCH MANUFACTURER SHALL PERFORM A COMPLETE FUNCTIONAL TEST ON THE SWITCH, CONTROLLER AND ACCESSORIES PRIOR TO SHIPPING FROM THE FACTORY. A CERTIFIED TEST REPORT SHALL BE AVAILABLE UPON REQUEST.

4.3 SERVICE

A. THE MANUFACTURER SHALL MAINTAIN A NATIONAL SERVICE ORGANIZATION THAT IS FACTORY TRAINED AND CERTIFIED FOR TRANSFER SWITCH EQUIPMENT. IN ADDITION, THE SERVICE ORGANIZATION SHALL BE AVAILABLE 24 HOURS PER DAY, 365 DAYS PER YEAR.

4.4 WARRANTY

A. THE AUTOMATIC TRANSFER SWITCH SHALL BE WARRANTED AGAINST DEFECTIVE WORKMANSHIP FOR A PERIOD OF TWO YEARS.

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E1.3

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F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

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TEXAS REGISTRATION #2356
SKE PROJ. #1290416

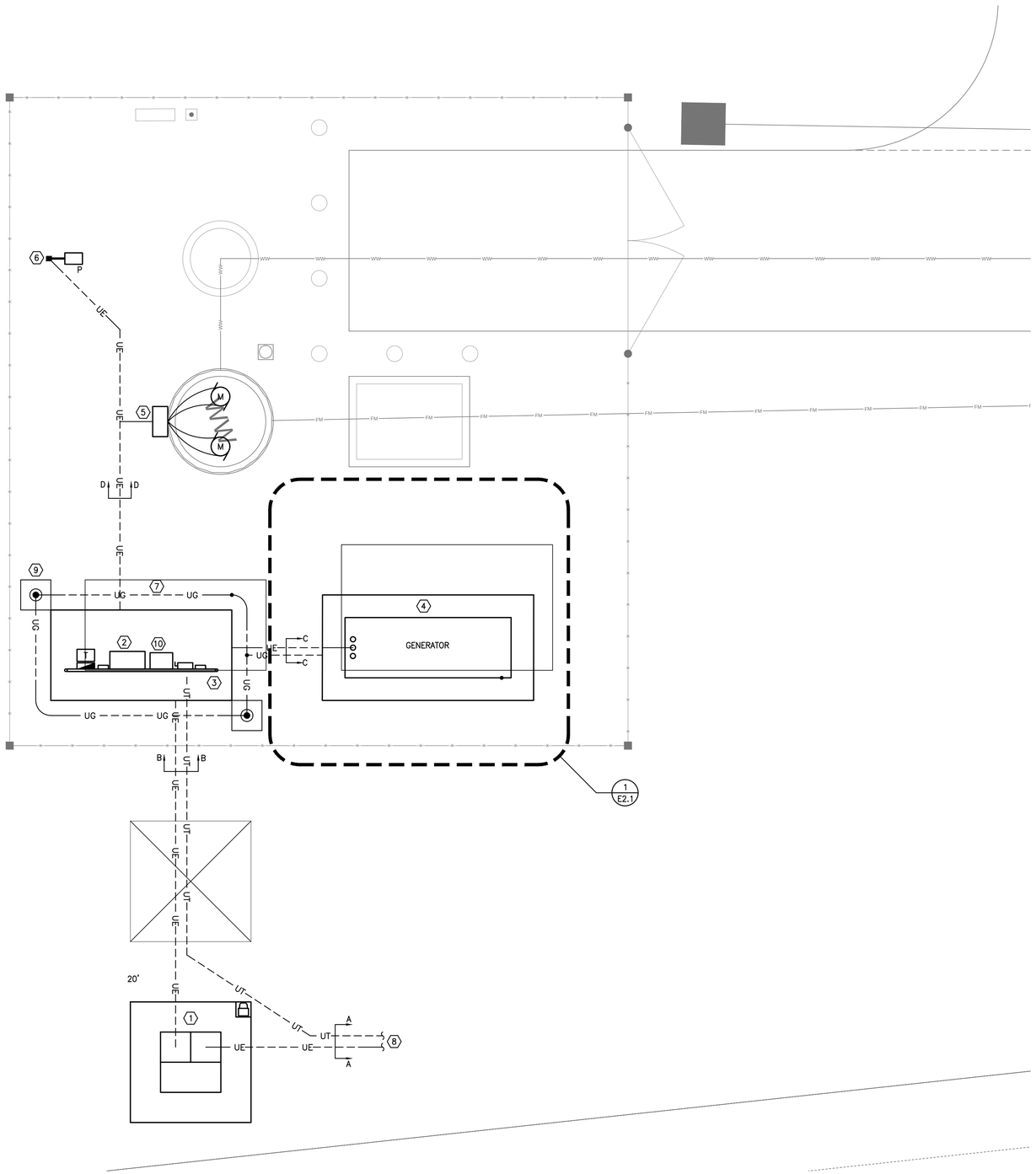
REVISIONS

NO	DATE - DESCRIPTION

EDITED: Oct 03, 2016
PLOTTED: ----
PLOTTED BY: Gary Brubaker

CRESCENT BELTERRA SECTION 21-2

GENERATOR / ATS SPECIFICATIONS



REFERENCE NOTES

1. INSTALL NEW 60A, 480/277V, 3 PHASE, 4 WIRE ELECTRICAL SERVICE. CONTRACTOR TO COORDINATE WITH PEC [PEC OAK HILL, WWW.PEC.COOP, 1-877-372-0391 EXT 7]. PROVIDE PULL STRING IN EACH CONDUIT. VERIFY EXACT LOCATION OF TRANSFORMER PAD PRIOR TO INSTALLATION.
2. PROVIDE AND INSTALL PUMP CONTROL PANEL. REFER TO E3.0 AND E5.0 FOR DETAILS.
3. PROVIDE AND INSTALL EQUIPMENT RACK. REFER TO E4.0 FOR DETAILS.
4. PROVIDE AND INSTALL CONCRETE PAD FOR GENERATOR. ACTUAL SIZE MAY VARY PENDING SELECTION OF MANUFACTURER. CONTRACTOR TO SIZE ACCORDINGLY. REFER TO CIVIL PLANS. VERIFY AND COORDINATE EXACT LOCATION WITH CIVIL ENGINEER PRIOR TO INSTALLATION. REFER TO E4.2 FOR DETAILS.
5. PROVIDE AND INSTALL WET WELL JUNCTION BOX. REFER TO 2/E4.1 FOR DETAILS.
6. PROVIDE AND INSTALL LIGHT POLE. REFER TO DETAIL 7/E4.2.
7. PROVIDE AND INSTALL #3/0 BARE COPPER GROUNDING RING. BOND EQUIPMENT RACKS AND GENERATOR SKID TO GROUNDING ELECTRODE SYSTEM VIA EXOTHERMIC WELD.
8. STUB UP CONDUITS 5' FROM PAD FOR FUTURE CONNECTION. ELECTRICAL CONTRACTOR TO COORDINATE INSTALLATION AND VERIFY EXACT LOCATION OF DEMARCATION POINT WITH TELEPHONE SERVICE COMPANY. CONTRACTOR TO INSTALL TELEPHONE CABLE FROM DEMARCATION POINT TO AUTO DIALER.
9. PROVIDE AND INSTALL GROUND RODS. REFER TO 3/E4.1 FOR DETAILS.
10. PROVIDE AND INSTALL NEW AUTOMATIC TRANSFER SWITCH. REFER TO 1/E3.0 FOR DETAILS.

1 E2.0 **ELECTRICAL SITE PLAN**
SCALE: 1/4"=1'-0"

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E2.0

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PROJECT DATA

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CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

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REVISIONS

NO	DATE - DESCRIPTION

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PLOTTED: ----
PLOTTED BY: Gary Brubaker

CRESCENT BELTERRA SECTION 21-2

ELECTRICAL SITE PLAN

XX
OF X

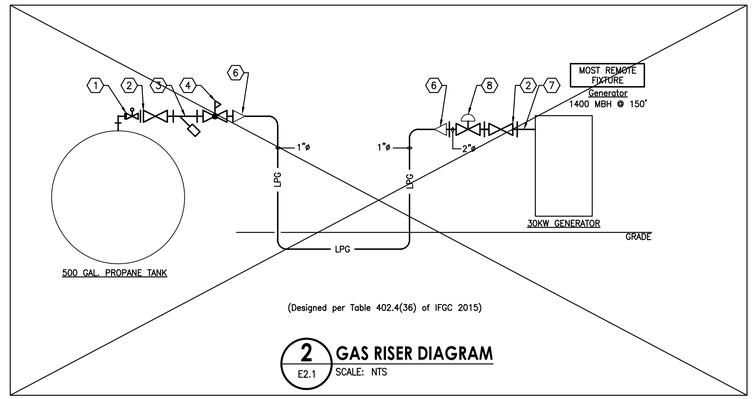
REFERENCE NOTES

1. PROPANE TANK SERVICE VALVE, SET TO 2 PSI.
2. MANUAL SHUTOFF GATE VALVE.
3. DRY FUEL FILTER.
4. 2"ø PRESSURE REDUCING REGULATOR WITH REDUCER BUSHING DOWN TO 1"ø. REGULATOR SHALL NOT BE "PILOT" STYLE.
5. FILL PORT, INSTALLED BY TANK PROVIDER.
6. TURN VERTICAL WITHIN PROTECTIVE SADDLE. TRANSITION TO 2"ø SCHEDULE 40 CAST IRON PIPE.
7. PROVIDE MANUFACTURER–APPROVED FLEXIBLE HOSE CONNECTION.
8. REGULATOR SET TO GENERATOR WORKING PRESSURE.
9. 1"ø POLYETHYLENE GAS PIPE WITH UV PROTECTIVE COATING. TURN DOWN TOWARD GROUND WITHIN METAL PROTECTIVE SADDLE.
10. TURN HORIZONTAL OUT OF GROUND UP TO CONCRETE PAD.

GENERAL NOTES

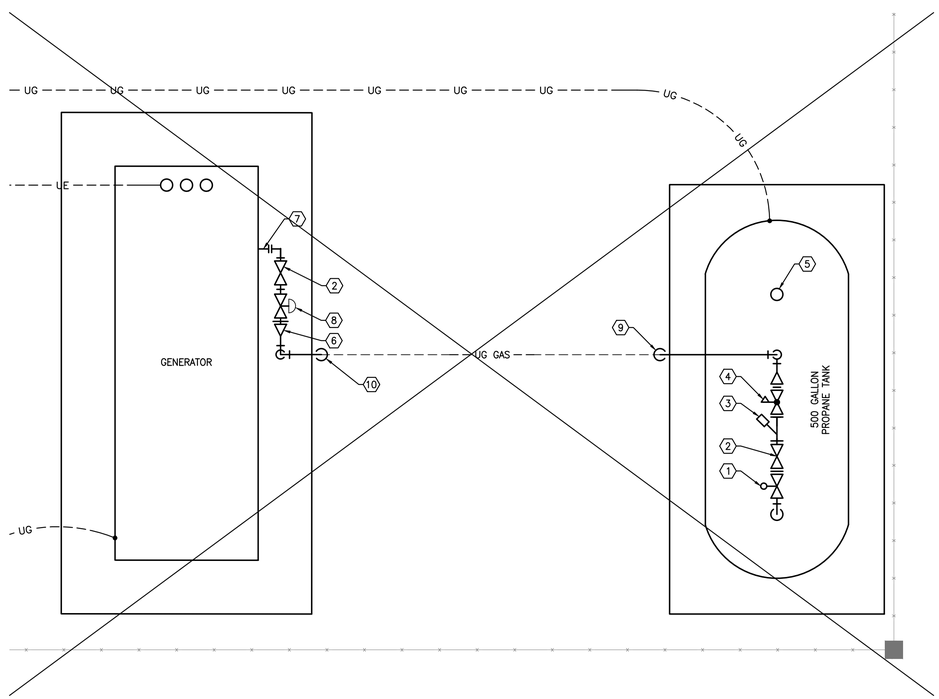
1. CONTRACTOR SHALL PROVIDE AND INSTALL GAS PIPING, FITTINGS, ACCESSORIES, AND OTHER MANUFACTURER'S CODE–REQUIRED APPURTENANCES BETWEEN THE PROPANE TANK AND THE GENERATOR.
2. CONTRACTOR SHALL INSTALL AND CONNECT PIPING PER THE MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS.

PER AS–BUILT
NOTES DO NOT APPLY



2 E2.1 **GAS RISER DIAGRAM**
SCALE: NTS

PER AS–BUILT
DETAILS DO NOT APPLY



1 E2.1 **ELECTRICAL SITE PLAN**
SCALE: 1/2"=1'–0"

PER AS–BUILT
DETAILS DO NOT APPLY

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PLOTTED:	----
PLOTTED BY:	Gary Brubaker

CRESCENT BELTERRA SECTION 21-2

ELECTRICAL SITE PLAN

XX OF X

BELTERRA LS LOAD CALCULATION

	UTILITY		
	HP	AMPS	KVA
MISC.			
LIGHTS, CONTROLS, MISC. 120V		21	5.0
MOTORS			
PUMP 1	5.0	8	7
PUMP 2	5.0	8	7
25% OF LARGEST MOTOR		2	2
25% SPARE		10	5
DESIGN KVA TOTAL			**25**
DESIGN AMPS @ 480/277 VOLTS, 3 PHASE		**49**	

NOTE: THE ELECTRICAL SERVICE IS DESIGNED TO RUN TWO 5 HP PUMPS AND ALL MISC LOADS.

PANEL LV

AMPS: 20A PRIMARY MCB/40A SECONDARY MCB
VOLTAGE: 240/120V
LOCATION: EQUIPMENT RACK
FED FROM: 5 KVA XFMR
PHASE: 1
WIRE: 3
MOUNTING: SURFACE
MINIMUM AIC RATING: 10KAIC
BUSSING: COPPER
NEMA: 4X STAINLESS STEEL

CKT. NO.	SERVICE DESCRIPTION	WIRE	BKR	POLES	KVA	A	B	KVA	POLES	BKR	WIRE	SERVICE DESCRIPTION	CKT. NO.
1	RECEPTACLE	12	20	1	1.0	1.1		0.1	2	20	10	SPD	2
3	LIGHTS	12	20	1	0.5		0.6	0.1				|	4
5	POLE LIGHT	12	20	1	0.5	1.0		0.5	1	20	12	AUTO DIALER	6
7	GEN BLOCK HEATER	12	20	1	1.0		2.0	1.0	1	20	12	BATTERY CHARGER	8
9	SPARE		20	1	0.0	0.0		0.0	1	20		SPARE	10
11	SPARE		20	1	0.0		0.0	0.0	1	20		SPARE	12
13	SPARE		20	1	0.0	0.0		0.0	1	20		SPARE	14
15	SPARE		20	1	0.0		0.0	0.0	1	20		SPARE	16
17	SPARE		20	1	0.0	0.0		0.0	1	20		SPARE	18
19	SPARE		20	1	0.0		0.0	0.0	1	20		SPARE	20
					PHASE LOAD IN KVA:	**2.1**	**2.6**						
					PHASE LOAD IN AMPS:	**18**	**22**						

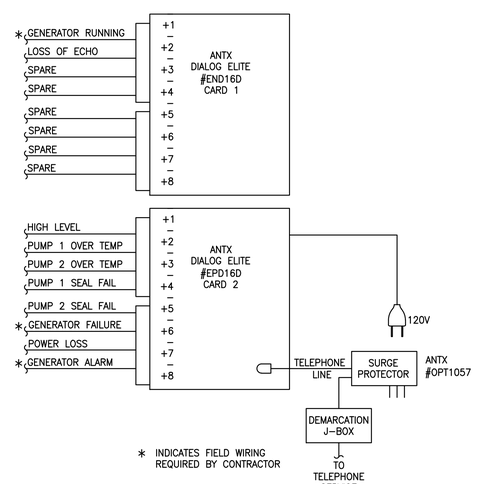
NOTE: SQUARE D MINI POWERZONE OR EQUAL

LIGHTING FIXTURE SCHEDULE

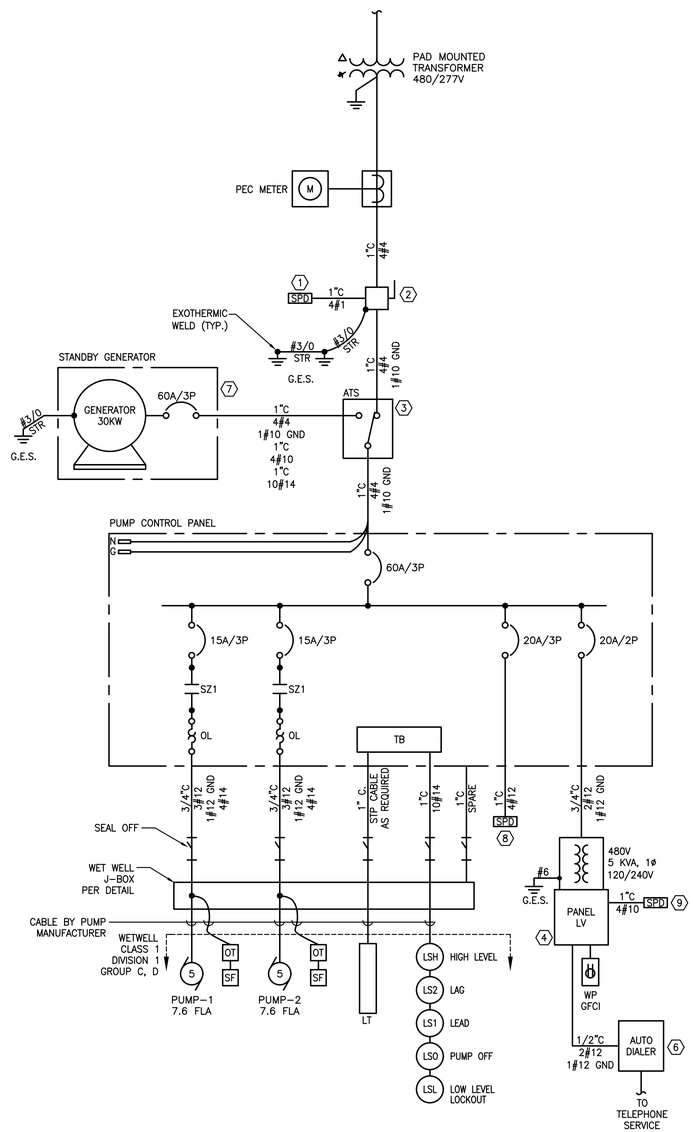
TYPE	MANUFACTURER	CATALOG NO.	LAMP QTY	LAMP TYPE	LAMP WATTS	FIX. WATTS	VOLTS	MOUNTING	REMARKS
A	LITHONIA	FEM4 LED 4L IMAFL	1	LED	61	61	120	SURFACE	HIGH-EFFICIENCY LED. SUITABLE FOR WET, DAMP, AND/OR COLD LOCATIONS.
P	LITHONIA	CSX1-LED-60C-700-40K-TFTM-120-RPA-PER-DDBXD	1	LED	134	134	120	POLE	LED FULL CUTTOFF, PHOTO CELL #DLL127F1.5JU #RSA-16-4-C-DM19AS-FBC-VD-DDB (16' ROUND ALUMINUM POLE)

REFERENCE NOTES

1. PROVIDE AND INSTALL SPD, EATON #SPD200480Y20 OR EQUAL IN A NEMA 4XSS STAINLESS STEEL ENCLOSURE. CONNECT TO LOAD SIDE.
2. PROVIDE AND INSTALL MAIN DISCONNECT SWITCH, 60A/3P/60AF/N4XSS/600V/SN/SE SQUARE D OR EQUAL. USE BUSSMANN #FRS-R-60 OR EQUAL.
3. PROVIDE AND INSTALL AUTOMATIC TRANSFER SWITCH, 60 AMP, 4 POLE, 600V, NEMA 4XSS ASCO OR EQUAL.
4. PROVIDE AND INSTALL PANEL "LV", REFER TO PANEL SCHEDULE.
5. ALL ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE NEMA 4XSS 316 STAINLESS STEEL.
6. PROVIDE AND INSTALL AUTO DIALER, ANTX DIALOG ELITE #END16D WITH SURGE PROTECTOR, ANTX #OPT1057 OR EQUAL IN A NEMA 4XSS STAINLESS STEEL ENCLOSURE.
7. PROVIDE AND INSTALL STANDBY PROPANE GENERATOR 30KW, 480/277V, 3 PHASE, CUMMINS OR EQUAL.
8. PROVIDE AND INSTALL SPD, EATON #SPD100480Y20 OR EQUAL IN A NEMA 4XSS STAINLESS STEEL ENCLOSURE. CONNECT TO LOAD SIDE.
9. PROVIDE AND INSTALL SPD, EATON #SPD50240S20 OR EQUAL IN A NEMA 4XSS STAINLESS STEEL ENCLOSURE. CONNECT TO LOAD SIDE.



2 E3.0 **AUTO DIALER**
SCALE: NTS



1 E3.0 **LIFT STATION ONE-LINE DIAGRAM**
SCALE: NTS

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E3.0

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Texas Engineering Solutions
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Austin, Texas 78704
O: 512-904-0505
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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER
CRESCENT BELTERRA TX, LLC
7000 N. MOPAC EXPRESSWAY, SUITE 360
AUSTIN, TX 78731

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TEXAS REGISTRATION #2356
SKE PROJ. #1290416

REVISIONS

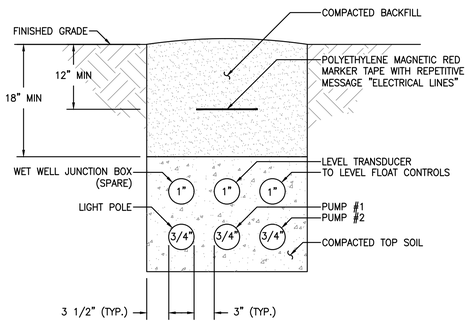
NO	DATE - DESCRIPTION

EDITED:	Oct 03, 2016
PLOTTED:	----
PLOTTED BY:	Gary Brubaker

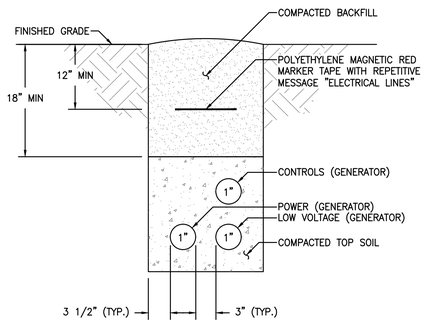
CRESCENT BELTERRA SECTION 21-2

ELECTRICAL ONE-LINE DIAGRAM

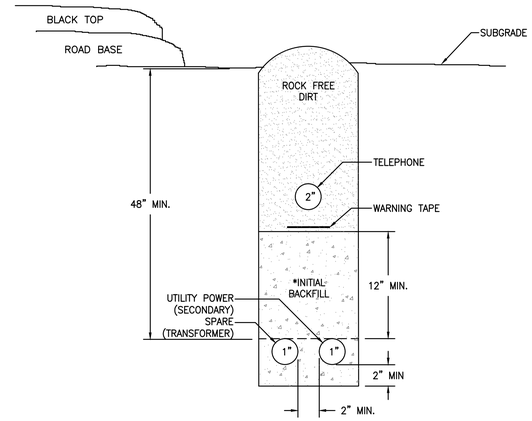
XX OF X



6 E4.0 **DETAIL - DUCT BANK SECTION D-D**
SCALE: NTS



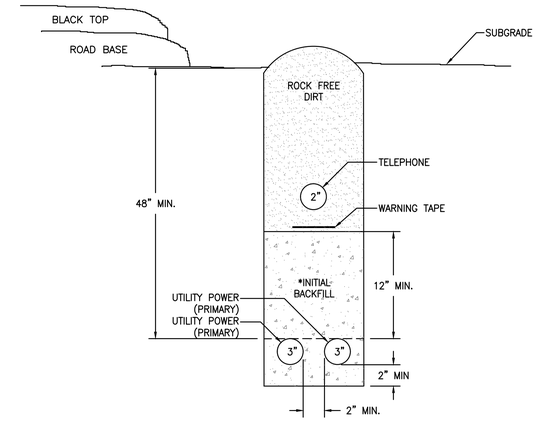
5 E4.0 **DETAIL - DUCT BANK SECTION C-C**
SCALE: NTS



SCH 40 OR MINIMUM 0.118" WALL PVC CONDUIT.

*INITIAL BACKFILL SHOULD BE SAND OR GRAVEL CONTAINING ROCK NOT TO EXCEED 3/8" IN DIAMETER.

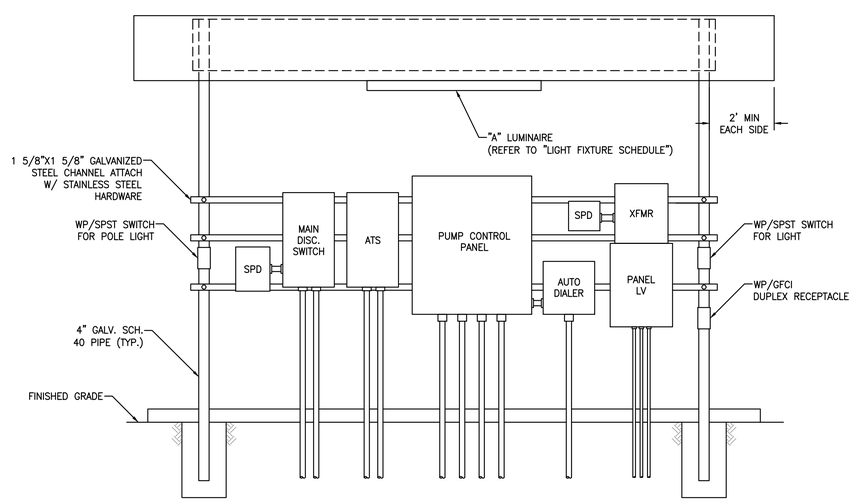
4 E4.0 **DETAIL - TRENCH SECTION B-B**
SCALE: NTS



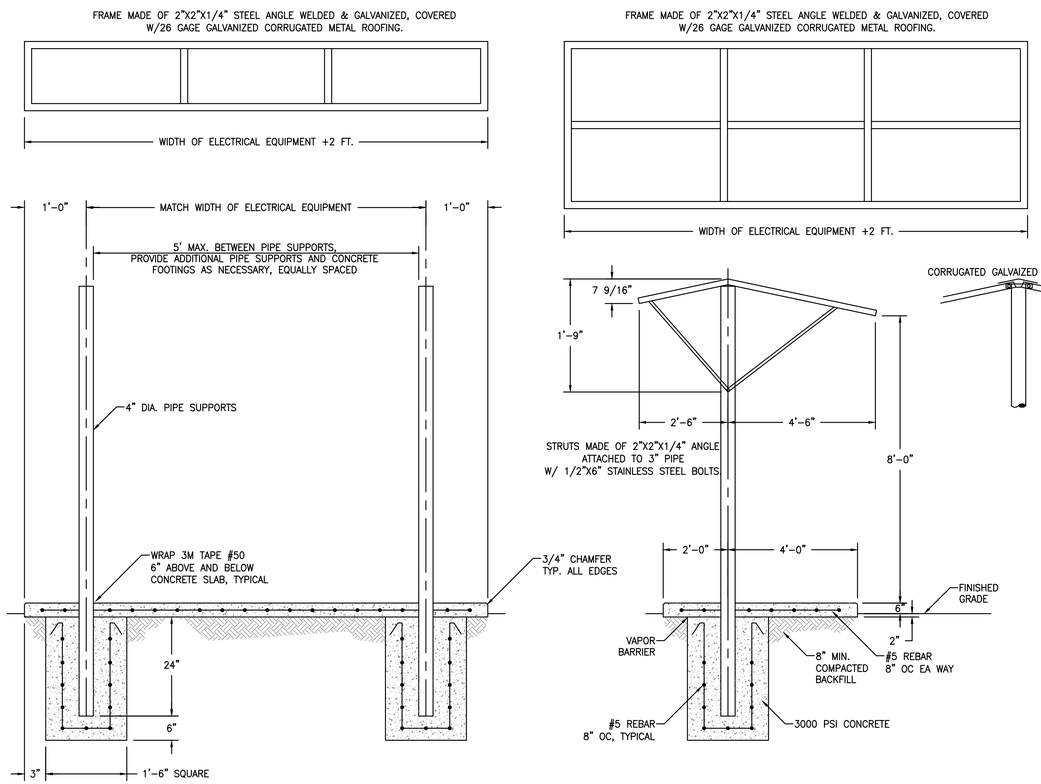
SCH 40 OR MINIMUM 0.118" WALL PVC CONDUIT.

*INITIAL BACKFILL SHOULD BE SAND OR GRAVEL CONTAINING ROCK NOT TO EXCEED 3/8" IN DIAMETER.

3 E4.0 **DETAIL - TRENCH SECTION A-A**
SCALE: NTS



2 E4.0 **DETAIL - TYPICAL ELECTRICAL EQUIPMENT INSTALLATION**
SCALE: NTS



NOTE:
ALL FABRICATED STEEL COMPONENTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. ALL FASTENERS SHALL BE STAINLESS STEEL.

1 E4.0 **DETAIL - TYPICAL RACK SUPPORT AND ROOFING**
SCALE: NTS

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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

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SKE PROJ. #1290416

REVISIONS

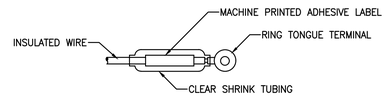
NO	DATE - DESCRIPTION

EDITED:	Oct 03, 2016
PLOTTED:	----
PLOTTED BY:	Gary Brubaker

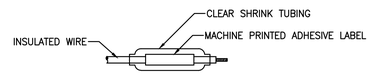
CRESCENT BELTERRA SECTION 21-2

ELECTRICAL DETAILS

XX OF X



WITH RING TONGUE TERMINAL

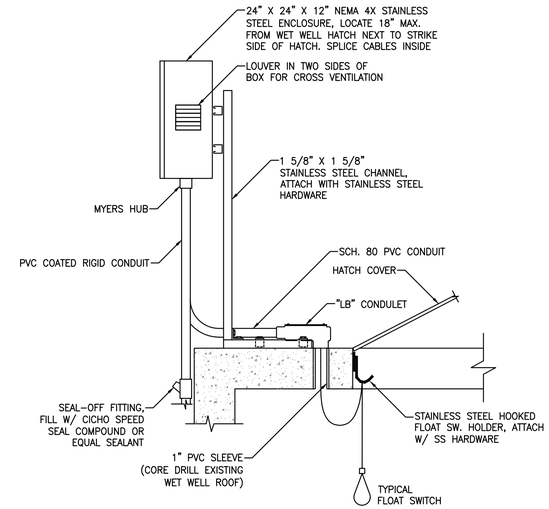


WITHOUT RING TONGUE TERMINAL

WHERE POSSIBLE RING TERMINALS SHALL BE USED. ONE OF THE ABOVE METHODS MUST BE USED ON ALL WIRE #8 AWG & SMALLER. THE SAME MUST ALSO BE USED ON LARGER WIRE UNLESS AN ALTERNATE METHOD IS SUBMITTED & APPROVED.

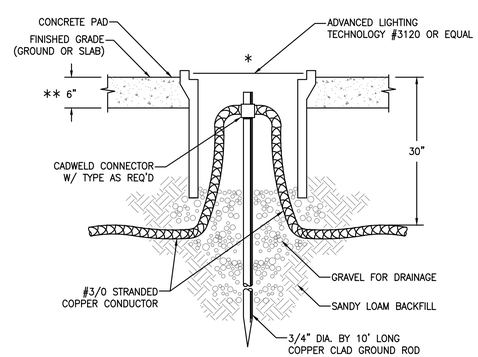
4 E4.1 DETAIL - WIRE TERMINATION AND MARKING

SCALE: NTS



2 E4.1 DETAIL - WET WELL JUNCTION BOX

SCALE: NTS

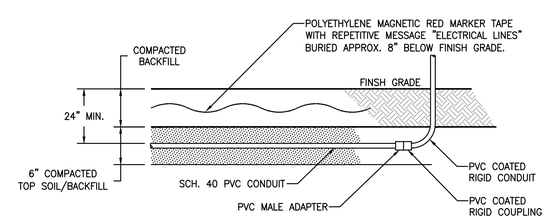


* INSTALL GROUND RODS AWAY FROM HEAVY TRAFFIC AREAS AND SIDEWALKS. COORDINATE EXACT LOCATION WITH CIVIL DRAWINGS.

** INSTALL 2'X2'X6" CONCRETE PAD.

3 E4.1 DETAIL - 3/4" X 10' GROUND ROD

SCALE: NTS



1 E4.1 DETAIL - TYPICAL UNDERGROUND CONDUIT RUN

SCALE: NTS

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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

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SKE PROJ. #1290416

REVISIONS

NO	DATE - DESCRIPTION

EDITED: Oct 03, 2016
PLOTTED: ----
PLOTTED BY: Gary Bruboker

CRESCENT BELTERRA SECTION 21-2

ELECTRICAL DETAILS

XX OF X

REFERENCE NOTES

(1) CONFIRM TRANSFORMER SPECIFICATIONS WITH PEC PRIOR TO INSTALLATION.

Typical All Pads

1) Require 3" conduit (unless otherwise specified by PEC) with bell end fittings to extend 1 ½" to 2" above pad.
2) Pads must extend a minimum of 4" above final grade and 1½" below final grade. All pads must be placed on a slope less than or equal to 3:1. If greater than 3:1 contractor must bring slope to required grade.
3) All disturbed soil underneath pad must be replaced by concrete.
4) All ground rods shall be ¾" X 10' Copper clad with clamp and must extend 3" above top of pad.
5) Wood float finish leaving pad square and level with no dips or crown.

Typical For Single Phase Transformer, Combination, Sectionalizer, and Secondary Pads

6) Concrete to have minimum strength of 3000 PSI.
7) Steel reinforcing shall be 6" X 6" No. 10 wire mesh or ⅜" rebar on 12" center to stop 1" from the sides.

Typical For 3 Phase Transformer Pads

8) Concrete testing, 4000 PSI; 4%-6% entrained air, ¾" maximum size aggregate.
9) Steel reinforcement shall be ⅜" rebar on 12" center to stop 1" from sides.
10) Minimum concrete cover over reinforcing steel 2" unless noted.
11) Consult with PEC before pouring concrete.

Typical Trench Details

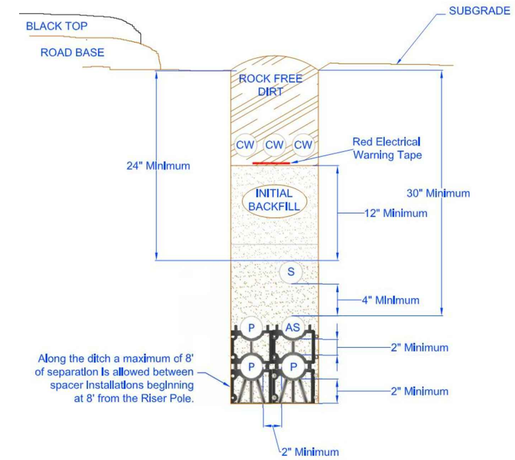
12) Schedule 40 electrical grade PVC conduit. Schedule 80 electrical grade conduit can be used in place of sand in secondary only trenches.
13) Initial backfill shall be manufactured or commercial sand. Minimum ⅜" pea gravel may be used for initial backfill in flood prone areas.
14) With PEC approval minimum cover requirements may be reduced by six inches with every two inches of 3000 PSI concrete poured directly onto conduit. ***CONTACT PEC BEFORE POURING CONCRETE***
15) If any type of vault or pedestal for the underground electric is planned then all other utilities should be routed around these facilities.
16) For 2" and **smaller** waterlines special permission must be granted by PEC. Water lines larger than 2" will not be allowed in PEC trench.
17) For Gas lines 6" or larger, special permission must be granted by PEC and reference drawing 510-023-0911 shall be used

Legend

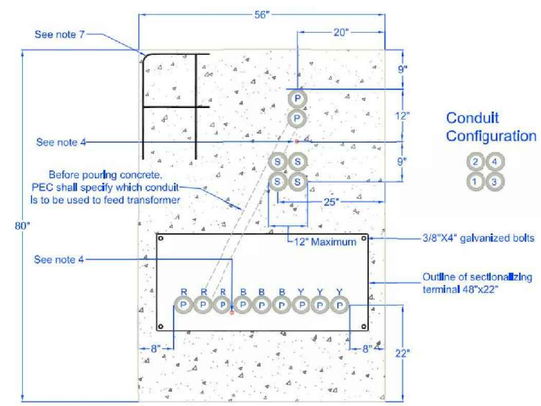
Typical in all Drawings

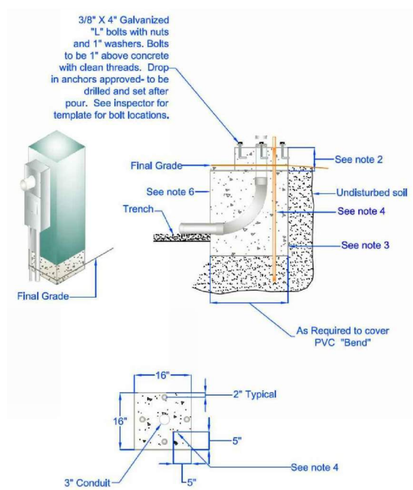
P	Primary Conduit	CW	Communications or water
S	Secondary Conduit	G	Gas Line
AS	Alternate Secondary Conduit		

4 / E4.2 **TYPICAL NOTES REFERENCE PAGE**
SCALE: NTS

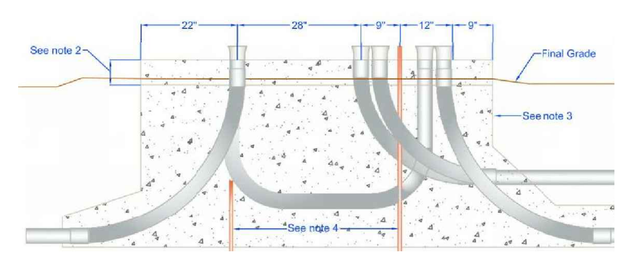


2 / E4.2 **3Ø CONDUIT ARRANGEMENT JOINT WITH OTHER UTILITIES**
SCALE: NTS





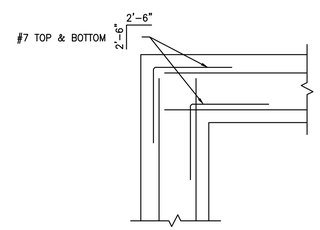
3 / E4.2 **PAD FOR SERVICE METER PEDESTAL**
SCALE: NTS



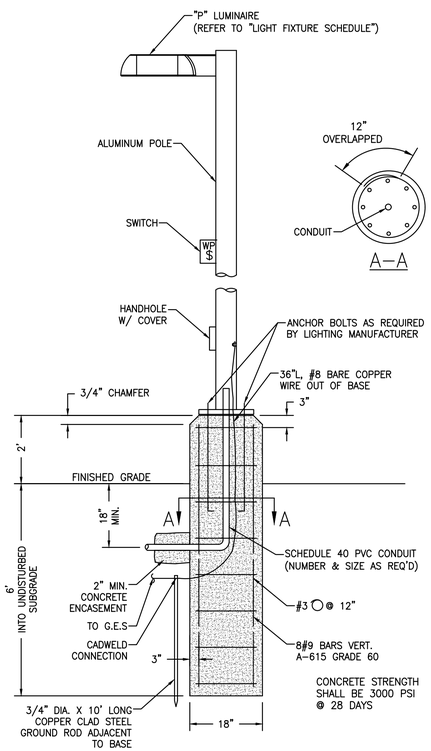
1 / E4.2 **SMALL COMBINATION SECTIONALIZING ENCLOSURE AND TRANSFORMER PAD** (1)
SCALE: NTS

CONCRETE CONSTRUCTION

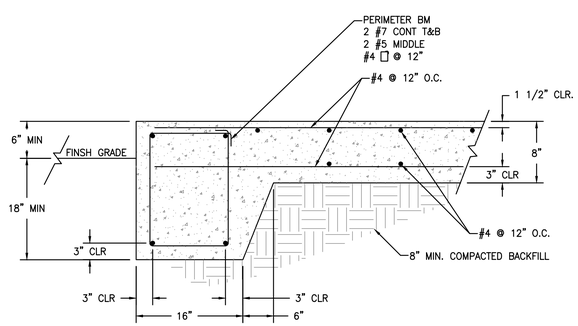
1. CONCRETE SHALL BE NORMAL WEIGHT CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI. CONCRETE SHALL BE MIXED AND PLACED IN ACCORDANCE WITH ASTM C94 "STANDARD SPECIFICATION FOR READY MIXED CONCRETE" AND ACI 304 "GUIDE FOR MEASURING, MIXING AND PLACING CONCRETE."
2. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASTM A615 WITH SUPPLEMENTAL REQUIREMENTS S1, GRADE 60.
3. DETAILING, FABRICATION AND INSTALLATION OF REBAR SHALL COMPLY WITH THE REQUIREMENTS OF AMERICAN CONCRETE INSTITUTE 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES."
4. PROVIDE SUPPORTS OR CHAIRS TO SUPPORT THE REBAR AT THE POSITIONS SHOWN. MAXIMUM SPACING OF SUPPORTS FOR SLAB REBAR SHALL BE 3'–0" ON CENTERS EACH WAY. MAXIMUM SPACING OF REBAR FOR EDGE BEAMS SHALL BE 6'–0" MAXIMUM ON CENTERS.



6 / E4.2 **DETAIL - GENERATOR PAD GRADE BEAM CORNER BARS**
SCALE: NTS



7 / E4.2 **DETAIL - LIGHTING FIXTURE**
SCALE: NTS



5 / E4.2 **DETAIL - GENERATOR PAD**
SCALE: NTS

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PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
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GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
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PLOTTED BY:	Gary Brubaker

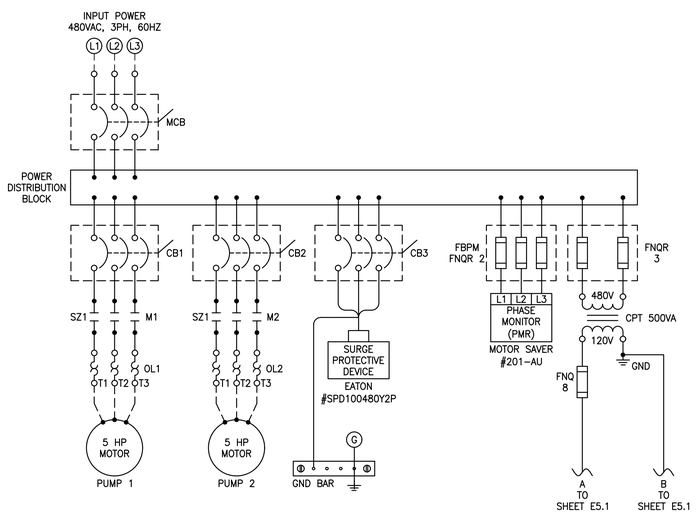
CRESCENT BELTERRA SECTION 21-2

ELECTRICAL DETAILS

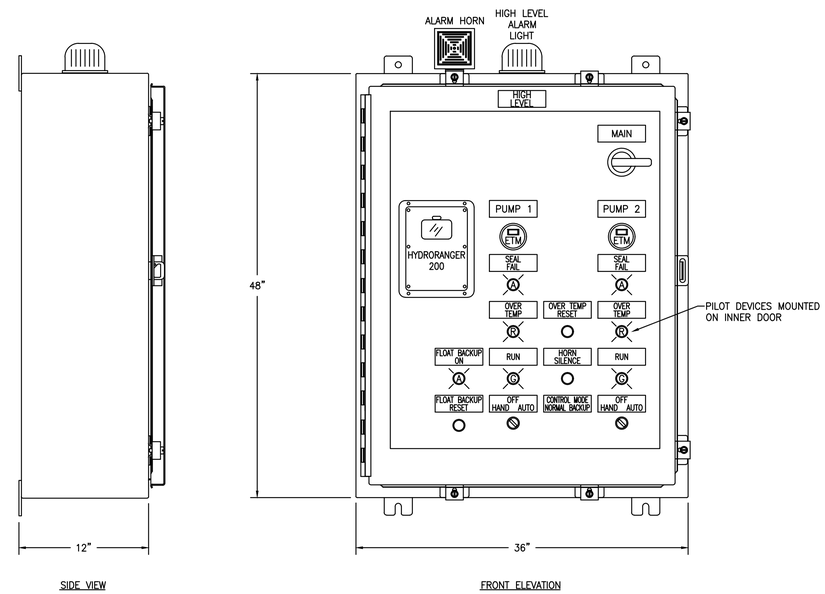
XX OF X

REFERENCE NOTES

1. PUMP CONTROL PANEL WIRING DIAGRAM IS TYPICAL. FINAL HARDWARE CONFIGURATION WILL VARY ACCORDING TO PUMP CONTROL PANEL SPECIFICATIONS.
2. DUPLEX PUMP CONTROL PANEL, 480V, 3 PHASE, UL508A LABELED. VERIFY EXACT PUMP SIZES AND SIZE CIRCUIT BREAKERS AND OVERLOADS ACCORDINGLY.



2 E5.0 **PUMP ONE-LINE DIAGRAM** (1)(2)
SCALE: NTS



ENCLOSURE: NEMA 4X 316 STAINLESS STEEL
W/ INNER DOOR. 36.00" X 60.00" X 12.00"

1 E5.0 **DETAIL - PUMP CONTROL ENCLOSURE** (1)(2)
SCALE: NTS

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THE LIFT STATION SHALL OPERATE PER THE SEQUENCE OF OPERATIONS AS NOTED ON THE CIVIL DRAWINGS AND SPECIFICATIONS. PLEASE NOTIFY THE ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES.

E5.0

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Texas Engineering Solutions

3815 S. Capital of Texas Hwy.
Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

CRESCENT BELTERRA TX, LLC
7000 N. MOPAC EXPRESSWAY, SUITE 360
AUSTIN, TX 78731

CONSULTANTS:

S. Kanetzky Engineering, LLC.
5920 West William Cannon Drive
Bldg. 7 Suite 200
Austin Texas 78749
(512) 326-3380 TEL.
(512) 329-5774 FAX
www.skaneng.com
TEXAS REGISTRATION #2356
SKE PROJ. #1290416

REVISIONS

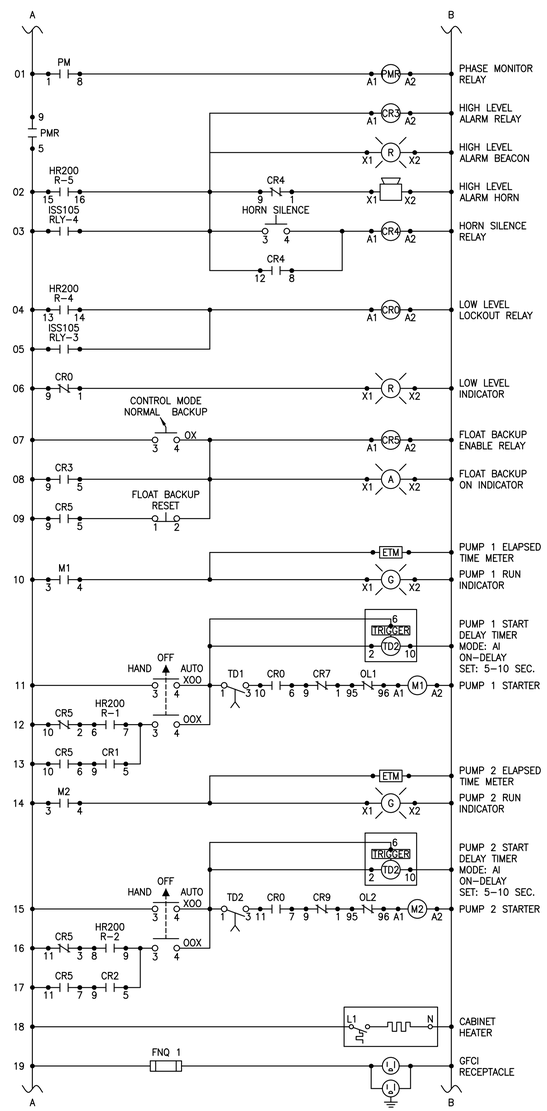
NO	DATE - DESCRIPTION

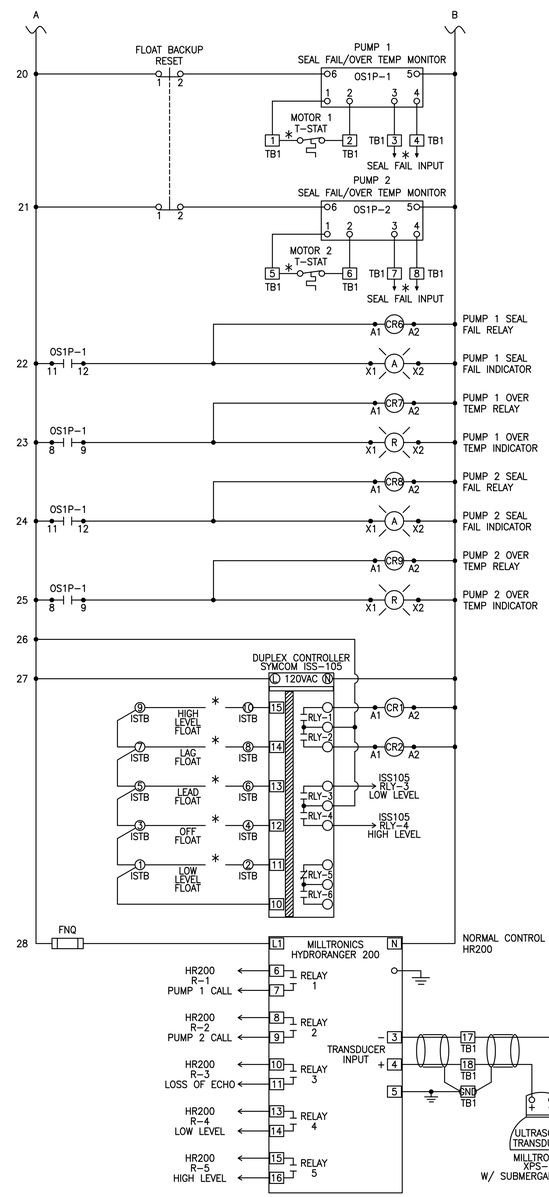
EDITED: Oct 03, 2016
PLOTTED: ----
PLOTTED BY: Gary Bruboker

CRESCENT BELTERRA SECTION 21-2

ELECTRICAL CONTROLS

XX OF X





* = FIELD WIRED BY CONTRACTOR.

1 / E5.1 **CONTROLS SCHEMATIC** (1)

SCALE: NTS

REFERENCE NOTES

(1) PUMP CONTROL PANEL WIRING DIAGRAM IS TYPICAL. FINAL HARDWARE CONFIGURATION WILL VARY ACCORDING TO PUMP CONTROL PANEL SPECIFICATIONS.

SEQUENCE OF OPERATIONS:

THE SEQUENCE OF OPERATION DESCRIBED HEREIN IS FOR THE LIFT STATION:

LEVEL CONTROL OPERATION:

THE PUMP CONTROL PANEL SHALL UTILIZE ONE (1) SUBMERSIBLE LEVEL TRANSMITTER TO CONTROL THE LEVEL IN THE WET WELL. ON SUMP LEVEL RISE TO LEAD PUMP TURN-ON LEVEL SETTING, THE CONTROLLER SHALL START THE LEAD PUMP. WITH LEAD PUMP OPERATING, SUMP LEVEL SHALL LOWER TO LOW LEVEL TURN-OFF SETTING AND PUMP SHALL STOP. ALTERNATING RELAY SHALL INDEX ON STOPPING OF PUMP SO THAT LAG PUMP WILL START ON NEXT OPERATION. IF SUMP LEVEL CONTINUES TO RISE WHEN LEAD PUMP IS OPERATING AND REACH LAG PUMP TURN-ON LEVEL SETTING, THE CONTROLLER SHALL START LAG PUMP. BOTH LEAD AND LAG PUMP SHALL OPERATE TOGETHER UNTIL LOW LEVEL TURN-OFF SETTING IS REACHED AND STOP BOTH PUMPS. IF LEVEL CONTINUES TO RISE WHEN BOTH PUMPS ARE OPERATING AND HIGH LEVEL SETTING IS REACHED, THE CONTROLLER SHALL TRIGGER THE HIGH LEVEL ALARM. ALARM SHALL BE MANUAL RESET. LEVELS SHALL BE SET AS INDICATED IN THE SPECIFICATIONS AND SHOWN ON THE CIVIL PLANS. AN AUTOMATIC BACKUP LEVEL FLOATS SYSTEM SHALL BE PROVIDED. IF ONE PUMP SHOULD FAIL FOR ANY REASON, THE SECOND PUMP SHALL OPERATE ON THE CONTROLLER OVERRIDE SIGNAL. ALL LEVEL SETTINGS SHALL BE ADJUSTABLE FROM THE CONTROLLER ELECTABLE MENU/SCREEN. WITH THE PUMP OPERATING, THE SUMP FLUID LEVEL SHALL LOWER. WHEN THE LOW LEVEL TURN-OFF SETTING IS REACHED THE PUMP OR PUMPS RUNNING WILL THEN CEASE TO OPERATE.

AUTOMATIC BACKUP LEVEL FLOATS OPERATION:

WHEN THE LEVEL TRANSMITTER FAILS THE PUMP CONTROL PANEL SHALL AUTOMATICALLY OPERATE BY THE LEVEL FLOATS ACCORDING TO THE FOLLOWING ORDER.

ON SUMP LEVEL RISE, LOWER (OFF) MERCURY FLOAT SWITCH SHALL FIRST BE ENERGIZED. WHEN THE LEVEL RISES FURTHER, THEN UPPER (LEAD PUMP) LEVEL SWITCH SHALL NEXT ENERGIZE AND START LEAD PUMP. WITH LEAD PUMP OPERATING, SUMP LEVEL SHALL LOWER TO LOW SWITCH TURN-OFF SETTING AND PUMP SHALL STOP. ALTERNATING RELAY SHALL INDEX ON STOPPING OF PUMP SO THAT LAG PUMP WILL START ON NEXT OPERATION. IF SUMP LEVEL CONTINUES TO RISE WHEN LEAD PUMP IS OPERATING, THE OVERRIDE SWITCH SHALL ENERGIZE AND START LAG PUMP. BOTH LEAD AND LAG PUMP SHALL OPERATE TOGETHER UNTIL LOW LEVEL SWITCH TURNS OFF BOTH PUMPS. IF LEVEL CONTINUES TO RISE WHEN BOTH PUMPS ARE OPERATING, ALARM SWITCH SHALL ENERGIZE AND SIGNAL THE ALARM. IF ONE PUMP SHOULD FAIL FOR ANY REASON, THE SECOND PUMP SHALL OPERATE ON THE OVERRIDE CONTROL AND IF LEVEL RISES ABOVE OVERRIDE CONTROL, ALARM SHALL SIGNAL. ALL LEVEL SWITCHES SHALL BE ADJUSTABLE FOR LEVEL SETTINGS FROM THE SURFACE. WITH THE PUMP OPERATING, THE SUMP FLUID LEVEL SHALL LOWER. WHEN THE LEVEL CAUSES THE LOWER (OFF) MERCURY FLOAT SWITCH TO TILT BACK TOWARD HANGING VERTICAL, ITS CONTACT SHALL OPEN CAUSING THE MOTOR CONTACTOR TO LOSE POWER TO THE COIL AND THUS OPEN THE CIRCUIT TO THE PUMP MOTOR. THE PUMP OR PUMPS RUNNING WILL THEN CEASE TO OPERATE.

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3815 S. Capital of Texas Hwy.
Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

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TEXAS REGISTRATION #2356
SKE PROJ. #1290416

REVISIONS

NO	DATE - DESCRIPTION

EDITED:	Oct 03, 2016
PLOTTED:	----
PLOTTED BY:	Gary Brubaker

CRESCENT BELTERRA SECTION 21-2

ELECTRICAL CONTROLS

XX OF X

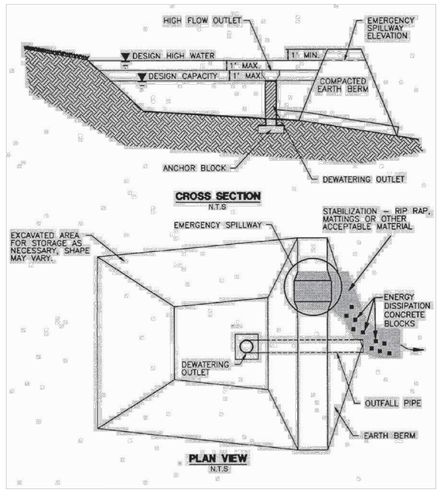
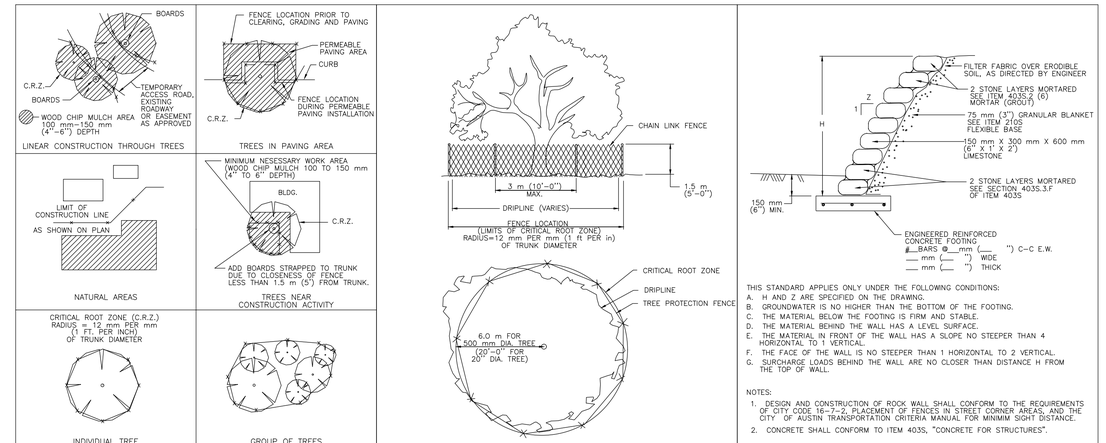


Figure 1-41 Schematic of a Sediment Basin (NCTCOG, 1993)

ROUGH CUT PONDS PROPOSED AS TEMPORARY SEDIMENT BASINS (REFER TO SEQUENCE OF CONSTRUCTION). ALTERNATE DEWATERING METHODS ACCEPTABLE IN ACCORDANCE WITH TCEQ RG-348 SECTION 1.4.15. NO SEPARATE PAYMENT FOR BASIN DEWATERING, INCLUDE COSTS IN RELATED BID ITEMS.



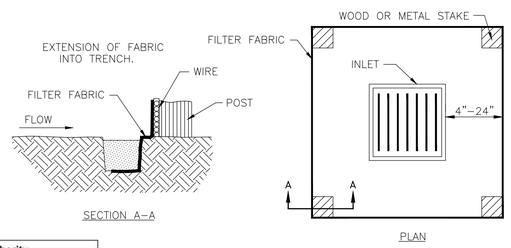
THIS STANDARD APPLIES ONLY UNDER THE FOLLOWING CONDITIONS:

A. H AND Z ARE SPECIFIED ON THE DRAWING.
B. GROUNDWATER IS NO HIGHER THAN THE BOTTOM OF THE FOOTING.
C. THE MATERIAL BELOW THE FOOTING IS FIRM AND STABLE.
D. THE MATERIAL BEHIND THE WALL HAS A LEVEL SURFACE.
E. THE MATERIAL IN FRONT OF THE WALL HAS A SLOPE NO STEEPER THAN 4 HORIZONTAL TO 1 VERTICAL.
F. THE FACE OF THE WALL IS NO STEEPER THAN 1 HORIZONTAL TO 2 VERTICAL.
G. SURCHARGE LOADS BEHIND THE WALL ARE NO CLOSER THAN DISTANCE H FROM THE TOP OF WALL.

NOTES:

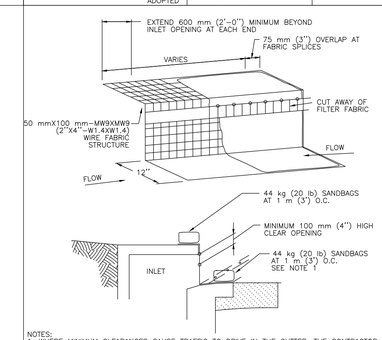
1. DESIGN AND CONSTRUCTION OF ROCK WALL SHALL CONFORM TO THE REQUIREMENTS OF CITY CODE 16-7-2 PLACEMENT OF FENCES IN STREET CORNER AREAS, AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL FOR MINIMM SIGHT DISTANCE.
2. CONCRETE SHALL CONFORM TO ITEM 403S, "CONCRETE FOR STRUCTURES".

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROTECTION FENCE LOCATIONS		CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	TREE PROPTECTION FENCE TYPE A - CHAIN LINK		DEPARTMENT OF PUBLIC WORKS	DRY STACK ROCK WALL FOR SLOPE PROTECTION	
RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-1	RECORD COPY SIGNED BY J. PATRICK MURPHY 11/15/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-2	RECORD COPY SIGNED BY BILL GARDNER 03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 623S-1



AREA INLET PROTECTION

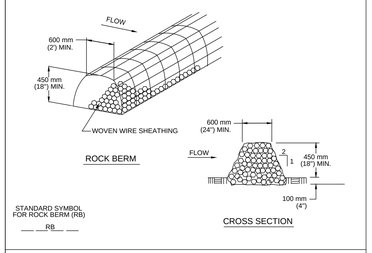
SCALE: N.T.S.



NOTES:

1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, THE CONTRACTOR MAY SUBSTITUTE A 25 mm X 100 mm (1" X 4") BOARD SECURED WITH CONCRETE NAILS 1 m (3') O.C. NAILED INTO THE GUTTER IN LIEU OF SANDBAGS TO HOLD THE FILTER DIKE IN PLACE. UPON REMOVAL, CLEAN ANY DIRT/DEBRIS FROM NAILING LOCATIONS, APPLY CHEMICAL SANDING AGENT AND APPLY NON-SHRINK GROUT FLUSH WITH SURFACE OF GUTTER.
2. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 50 mm (2").
4. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
5. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	FILTER DIKE CURB INLET PROTECTION		CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	ROCK BERM	
RECORD COPY SIGNED BY J. PATRICK MURPHY 2/21/01 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 628S-2	RECORD COPY SIGNED BY MORGAN BYARS 8/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 639S-1



NOTES:

1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 22.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED,THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

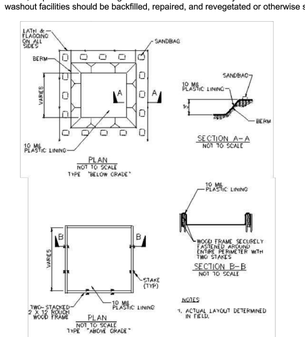
Lower Colorado River Authority
Watershed Management
Erosion and Sedimentation Control Details

Concrete Washout Areas

The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

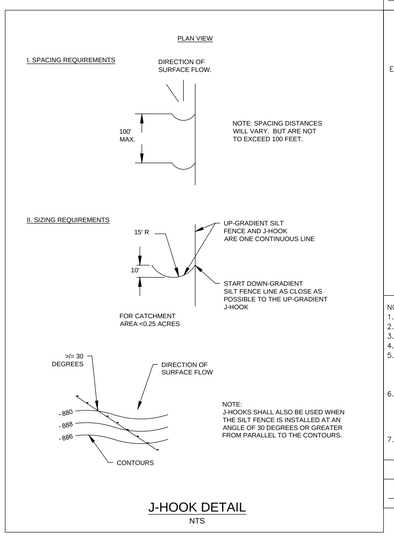
Notes:

1. Avoid mixing excess amounts of fresh concrete.
2. Perform washout of concrete trucks in designated areas only.
3. Construct washout area using 10 mil plastic lining and anchor the lining with sandbags or rocks.
4. Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. **Do not allow runoff from this area - construct a temporary pit or bermed area large enough to contain both liquid and solid waste.**
5. Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly, along with the lining.
6. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled, repaired, and revegetated or otherwise stabilized.



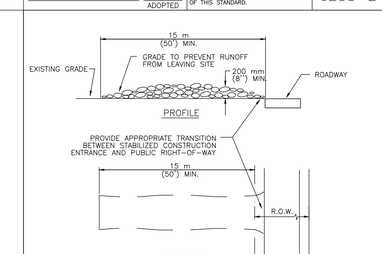
Schematics of Concrete Washout Areas

For more information, see the LCRA Water Quality Management Technical Manual
For questions or information, call LCRA at (800) 776-5272, ext. 2324 or visit www.lcra.org



J-HOOK DETAIL

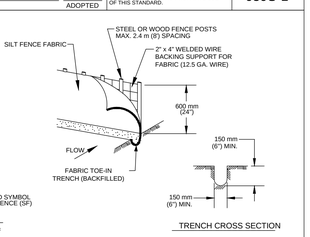
NTS



NOTES:

1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE		CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE	
RECORD COPY SIGNED BY J. PATRICK MURPHY 5/23/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S-1	RECORD COPY SIGNED BY MORGAN BYARS 09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S-1



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

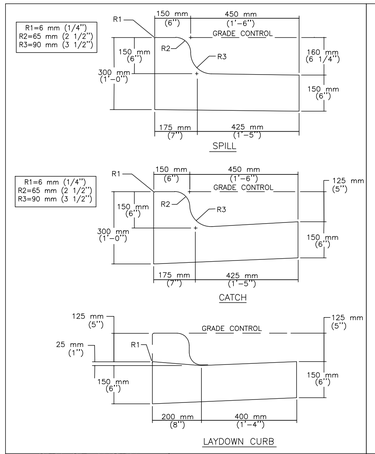
NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

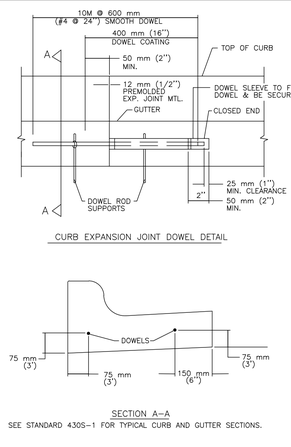
BELTERRA SECTION 21-2

ENVIRONMENTAL PROTECTION DETAILS

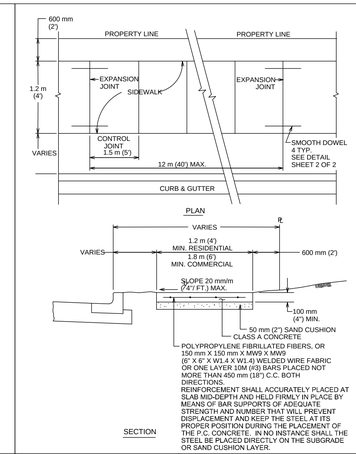
T:\Private\Makar\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-ESD.dwg



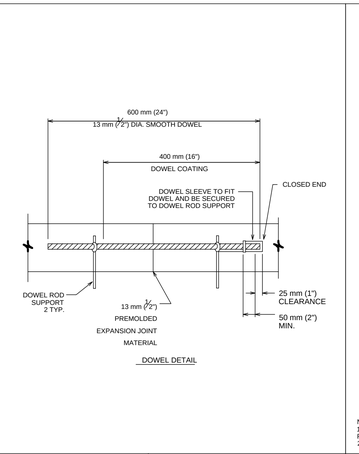
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION		CURB AND GUTTER SECTION	STANDARD NO.
RECORD COPY SIGNED BY LINO RIVERA	9/29/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	430S-1



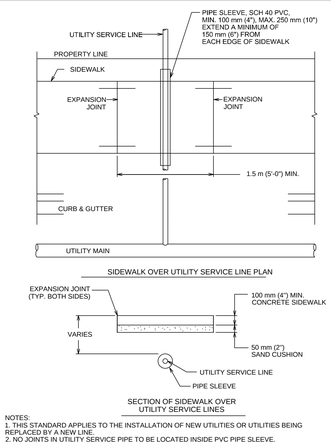
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION		CURB EXPANSION JOINT DOWEL DETAIL	STANDARD NO.
RECORD COPY SIGNED BY LINO RIVERA	9/29/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	430S–3



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SIDEWALK	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER	03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-1 1 OF 3

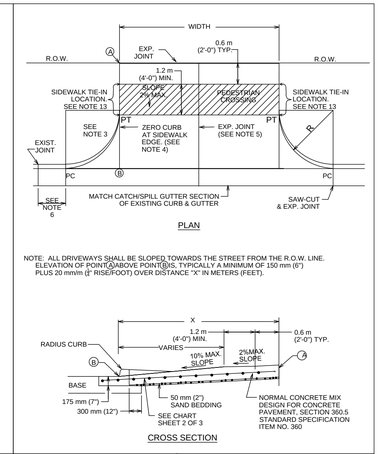


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SIDEWALK	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER	03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-1 2 OF 3

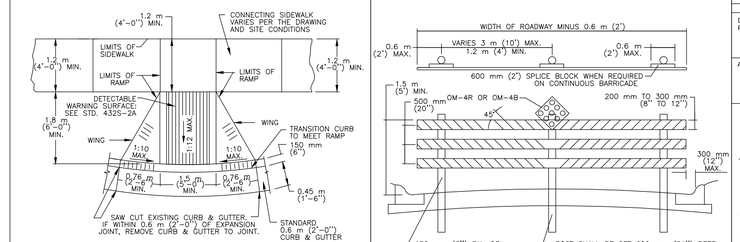


NOTES:
1. THIS STANDARD APPLIES TO THE INSTALLATION OF NEW UTILITIES OR UTILITIES BEING REPLACED BY A NEW LINE.
2. NO JOINTS IN UTILITY SERVICE PIPE TO BE LOCATED INSIDE PVC PIPE SLEEVE.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SIDEWALK	STANDARD NO.
RECORD COPY SIGNED BY BILL GARDNER	03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	432S-1 3 OF 3



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE II DRIVEWAY	STANDARD NO.
RECORD COPY SIGNED BY CUONG THAN	*02/24/10* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	433S-2 1 OF 2



GENERAL NOTES:

1. RAMP WILL HAVE DETECTABLE WARNING THAT CONSISTS OF A GROOVED SURFACE WITH GROOVES 1/4" DEEP, 3/4" WIDE AND 2" SPACING.

2. GROOVED SURFACE SHALL BE DIED CONCRETE OF CONTRASTING COLOR, CHOSEN BY OWNER. CONTRACTOR TO USE LITHOCHROME CHEMSTAIN COLOR CS-14 DARK WALNUT, SEALED WITH CEMENTONE CLEAR SEALER. L. M. SCOFIELD COMPANY (1-800-800-9900)

3. TYPICAL SIDEWALK WIDTHS AND CURB RADII ARE SHOWN FOR ILLUSTRATION. REFER TO APPROPRIATE DETAILS FOR SIDEWALK WIDTHS, CURB RADII AND CURB BASIS.

4. THE PERMISSIBLE CONSTRUCTION JOINT BETWEEN THE RAMP SURFACE AND THE LAYDOWN CURB SHALL BE LIMITED TO 6 mm (1/4") JOINT SIZE. GAPS LARGER THAN 6 mm (1/4") MUST BE APPROVED BY THE PROJECT MANAGER/INSPECTOR. GAPS GREATER THAN 6 mm (1/4") SHALL BE SOLID MORTAR FILLED BETWEEN THE BRICK PAVERS AND CURB UNLESS OTHERWISE INSTRUCTED BY THE PROJECT MANAGER/INSPECTOR.

5. MORTAR SHALL CONFORM TO ITEM 403.S (6)/403.2 (6). MORTAR (GROUT). ALL OTHER CONCRETE SHALL CONFORM TO ITEM 403/403S. "CONCRETE FOR STRUCTURES" UNLESS NOTED OTHERWISE.

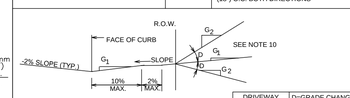
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK CURB RAMP
	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

NOTES:

1. WIDTH OF RAIL SHALL BE A MINIMUM OF 200 mm (8") AND MAY BE UP TO A MAXIMUM OF 300 mm (12"), 50 mm (2") NOMINAL SMOOTH LUMBER.
2. RAILS SHALL BE FASTENED TO EACH POST WITH 6 mm (1/4 ") STEEL BOLTS WITH WASHERS ON EACH SIDE. BOLT THREADS SHALL BE PEENED.
3. THE RAILS SHALL RECEIVE TWO COATS OF WHITE OIL BASE OUTSIDE PAINT, THEN SHALL HAVE 150 mm (6") WIDE REFLECTORIZED RED STRIPES OF TAPE PLACED ON 45 DEGREE SLOPES, DOWN AND TOWARD THE CENTER OF THE BARRICADE.
4. BARRICADES MAY BE CONSTRUCTED IN SECTIONS OR MAY BE CONTINUOUS ACROSS ROADWAY WIDTH. SPLICES ON CONTINUOUS RAIL BARRICADES SHALL BE AT POSTS AND SHALL HAVE A 600 mm (2') SPLICE BLOCK ON BACK SIDE OF THE SAME MATERIAL AS RAIL.
5. 450 mm (18") DIAMOND REFLECTORIZED RED PANEL OR 450 mm (18") DIAMOND RED OR BLACK PANEL WITH 9–75 mm (3") DIAMETER RED REFLECTORS SYMMETRICALLY PLACED AT CENTER POSTS. A MINIMUM OF 1.2 m (4') ABOVE GROUND SHALL BE USED FOR END OF ROAD MARKERS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION		STREET–END BARRICADE	STANDARD NO.
RECORD COPY SIGNED BY LINO RIVERA	9/29/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	803S–1

USE	THICKNESS	REINFORCEMENT
DRIVEWAYS FOR PASSENGER VEHICLE PARKING LOTS	150 mm (6") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS
ALL OTHERS	175 mm (7") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS



ALLOWABLE GRADES

DRIVEWAY VOLUME (ADT)	D=GRADE CHANGE STD.	MAX
>1500	0%	3%
500-1500	3%	6%
< 500	6%	15%

NOTES:

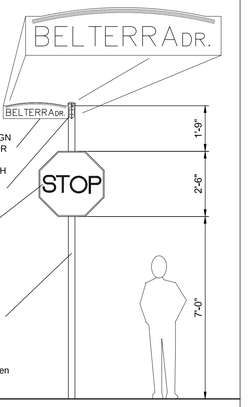
1. ALL TYPE II DRIVEWAYS SHALL HAVE RADIUS ENDS.
2. DRIVEWAY WIDTHS AND RADII DIMENSIONS, ONE/PAIR WAY TRAVEL REQUIREMENTS, AND GEOMETRIC LAY-OUT ARE HIGHLY VARIABLE, SUBJECT TO SITE SPECIFIC CONDITIONS AND REQUIREMENTS. SEE TRANSPORTATION CRITERIA MANUAL, SECTION 5 "DRIVEWAYS".
3. THE DRIVEWAY EDGE SHALL BE SMOOTHLY TRANSITITIONED INTO THE SIDEWALK TIE-IN LOCATION BEGINNING AT THE RADIUS PC LINE.
4. "ZERO" CURB AT PT OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST.
5. PLACE AN EXPANSION JOINT DOWN THE CENTER OF DRIVEWAY ALL DRIVEWAYS.
6. IF DIMENSION IS LESS THAN 1.5 METERS (5 FEET), REMOVE CURB AND GUTTER TO EXISTING JOINT AND POUR MONOLITHICALLY WITH DRIVEWAY.
7. IF THE BASE IS OVER-EXCAVATED WHERE THE CURB AND GUTTER WERE REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
8. TYPE II DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTERSECTING RIGHT OF WAY THAN 60% OF PARCEL FRONTAGE AT 30 METERS (100 FEET): WHICHEVER IS LESS.
9. DRIVEWAY SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
10. WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE CITY REQUIREMENTS ARE ESTABLISHED TO ENSURE THE DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND "GU IS GREATER THAN 15%.
11. USE 12 MM (1/2") ASPHALT BOARD OR OTHER APPROVED MATERIAL FOR CURB AND GUTTER EXPANSION JOINTS. SIDEWALK, AT THE R.O.W. LINE AND AT MIDWIDTH, SEE NOTE 5.
12. SEE TRANSPORTATION CRITERIA MANUAL, SECTION 5 FOR OTHER DRIVEWAY REQUIREMENTS.
13. THE SIDEWALK, REGARDLESS OF ITS LOCATION WITH RESPECT TO THE CURB OR PROPERTY LINE, SHALL BE CONNECTED TO THE DRIVEWAY AT THESE LOCATIONS.
14. WATER METER BOXES AND WASTEWATER CLEAN OUTS ARE PROHIBITED FROM BEING LOCATED IN DRIVEWAY AREAS.

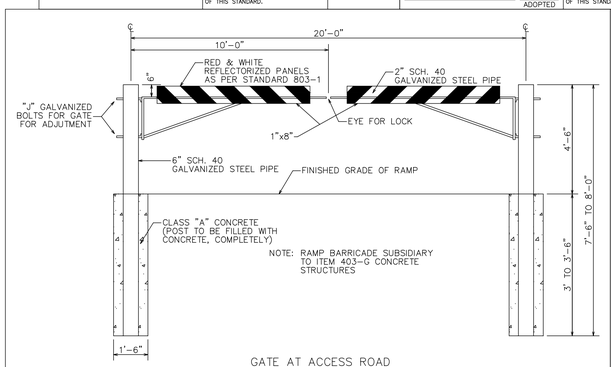
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE II DRIVEWAY	STANDARD NO.
RECORD COPY SIGNED BY CUONG THAN	*02/24/10* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	433S-2 2 OF 2

SIGN POLES - BELTERRA

STEEL SUPPORT POLES SHALL BE 3" SQUARE STEEL POSTS, TOPS CLOSED WITH BEVELED STEEL CAP WELDED IN PLACE. STEEL ANGLE SUPPORTS FOR ATTACHMENT OF SIGN BLADES TO BE WELDED PARALLEL WITH LENGTH OF STEEL POLE, WITH A 1/8" GAP BETWEEN ANGLES TO ALLOW INSERTION OF 125 ALUMINUM SIGN BLADE. EACH POLE TO HAVE SUPPORTS FOR 2 SIGN BLADES ORIENTED AT 90 DEGREES TO EACH OTHER. STEEL POLES TO BE PRIMED AND PAINTED USING MATTHEWS POLYURETHANE ENAMEL, CUSTOM COLOR MATCH FOR DURION "SEQUOIA" AS PROVIDED PREVIOUSLY BY SIGN CRAFTERS - SAN MARCOS, TX. FORMULA AVAILABLE ON REQUEST. (CONTACT AT SIGN CRAFTERS IS KAI JENSEN 512-392-0900).

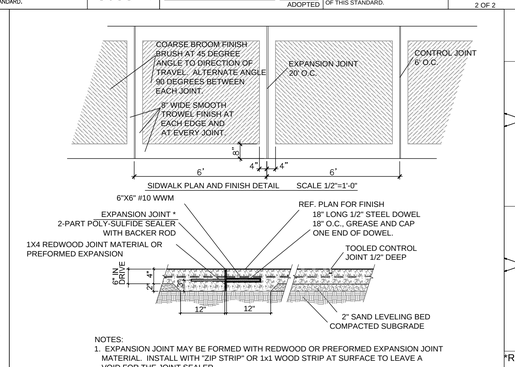
SIGN POLES TO BE SET IN CONCRETE FOOTING (DIRECT BURIAL). GENERAL LOCATION OF SIGN POLES PROVIDED BY OWNER. INSTALLER TO MARK LOCATION AND COORDINATE LOCATION OF UNDERGROUND UTILITIES PRIOR TO EXCAVATION.





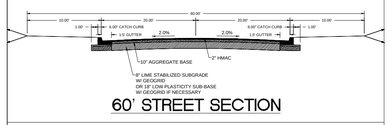
GATE AT ACCESS ROAD

N.T.S.

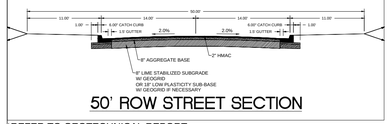


NOTES:
1. EXPANSION JOINT MAY BE FORMED WITH REDWOOD OR PREFORMED EXPANSION JOINT MATERIAL. INSTALL WITH "ZIP STRIP" OR 1x1 WOOD STRIP AT SURFACE TO LEAVE A VOID FOR THE JOINT SEALER.
2. EXPANSION JOINTS ARE TO BE 20' ON CENTER UNLESS NOTED OTHERWISE ON PLAN.
3. CONTROL JOINTS ARE TO BE 5' ON CENTER UNLESS NOTED OTHERWISE ON PLAN.
4. JOINT LAYOUT AT WALK CURVES AND INTERSECTIONS SHALL BE ACCORDING TO THE LAYOUT SHOWN ON THE PLAN DOCUMENTS. VARIATIONS TO THE JOINT LAYOUT MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE. FAILURE TO GAIN APPROVAL FOR VARIATIONS MAY BE CAUSE FOR REJECTION OF WORK.

SIDEWALK DETAIL



60' STREET SECTION



50' ROW STREET SECTION

*REFER TO GEOTECHNICAL REPORT

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

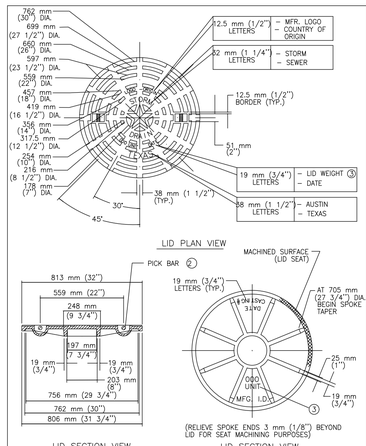
NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 25, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

STREET DETAILS

T:\Private\Makar\Crescent Belterra\Design\PH 2 SEC 21\Site Construction\S-CRESBELTRA_PH2_SEC21-STD.dwg

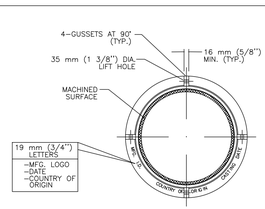


LID PLAN VIEW

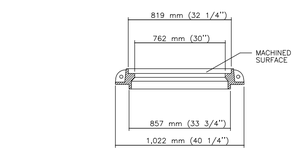
LID SECTION VIEW

LID SECTION VIEW

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STORM DRAIN MANHOLE RING AND 813 mm (32") COVER	
RECORD COPY SIGNED BY GEORGE E. OSWALD	2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S–4S 1 OF 3

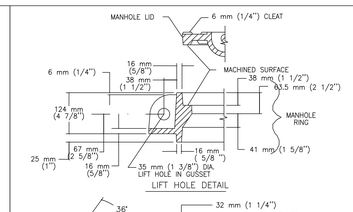


MANHOLE RING

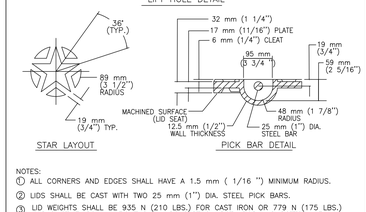


RING SECTION

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STORM DRAIN MANHOLE RING AND 813 mm (32") COVER	
RECORD COPY SIGNED BY GEORGE E. OSWALD	2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S–4S 2 OF 3



LIFT HOLE DETAIL

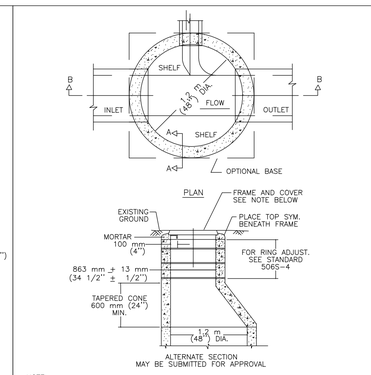


STAR LAYOUT

PICK BAR DETAIL

NOTES:
1. ALL CORNERS AND EDGES SHALL HAVE A 1.5 mm (1/16 ") MINIMUM RADIUS.
2. LIDS SHALL BE CAST WITH TWO 25 mm (1") DIA. STEEL PICK BARS.
3. LID WEIGHTS SHALL BE 935 N (210 LBS.) FOR CAST IRON OR 779 N (175 LBS.) FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF LID.
4. MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 25,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M–306.
5. FILLETS SHALL BE 6 mm (1/4 ") RADIUS UNLESS OTHERWISE SPECIFIED.
6. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		STORM DRAIN MANHOLE RING AND 813 mm (32") COVER	
RECORD COPY SIGNED BY GEORGE E. OSWALD	2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S–4S 3 OF 3

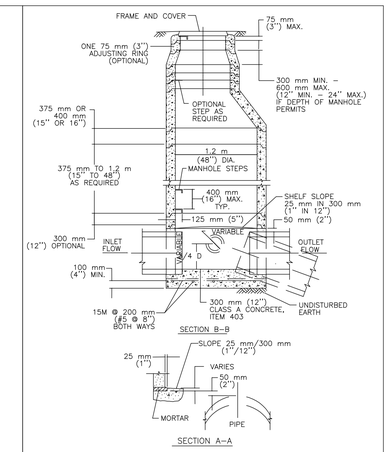


NOTE:
USE 800 mm (32") FRAME AND COVER.

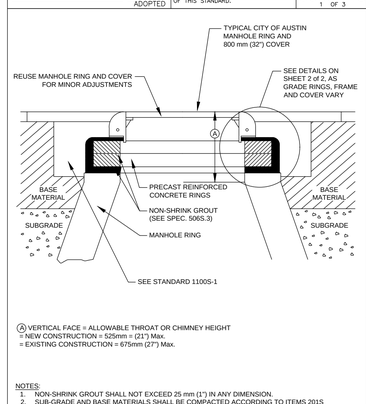
MINIMUM MANHOLE DIA.	MINIMUM PIPE SIZE
1.2 m (4')	450 TO 600 mm (18 TO 24")
1.5 m (5')	750 mm TO 1.1 m (30 TO 42")
1.8 m (6')	1.2 TO 1.4 m (48 TO 54")
2.1 m (7')	1.5 TO 1.7 m (60 TO 66")

SIZE TO BE USED IS DEPENDENT ON DRAIN ANGLES.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		PRE–CAST CONCRETE STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY GEORGE E. OSWALD	2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S–3 1 OF 2



CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		PRE–CAST CONCRETE STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY GEORGE E. OSWALD	2/14/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S–3 2 OF 2

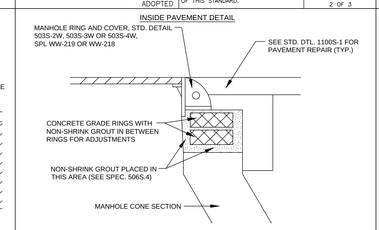


Ⓐ VERTICAL FACE = ALLOWABLE THROAT OR CHIMNEY HEIGHT
= NEW CONSTRUCTION = 525mm = (21") Max.
= EXISTING CONSTRUCTION = 675mm (27") Max.

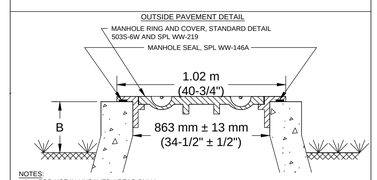
NOTES:
1. NON-SHRINK GROUT SHALL NOT EXCEED 25 mm (1") IN ANY DIMENSION.
2. SUB-GRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO ITEMS 201S AND 210S, RESPECTIVELY, OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
3. REFER TO STANDARD 1100S-1 FOR REPAIRS AROUND MANHOLES.
4. SEE STANDARD 506S-4A FOR HDPE RING INSTALLATION (FOR USE IN PAVED AREAS ONLY).

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 1 OF 2

INSIDE PAVEMENT DETAIL

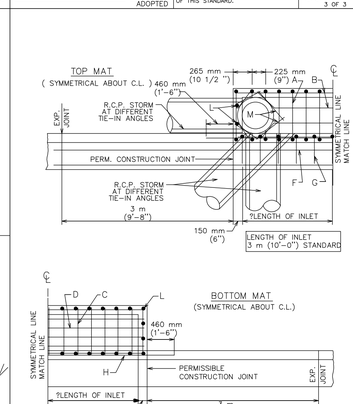


OUTSIDE PAVEMENT DETAIL

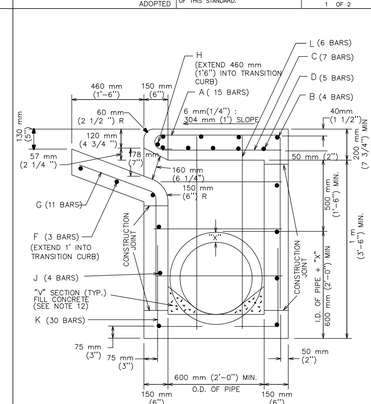


NOTES:
1. FOR USE IN UNPAVED AREAS ONLY
2. WHEN USED WITHIN 100-YEAR FLOODPLAIN, SEE DTL. 506S-6 FOR ADDITIONAL M.H. REQUIREMENTS.
3. DIMENSION B=150-300 mm (6"-12") FOR M.H. LOCATED IN 100-YR FLOOD PLAN. =50-300 mm (2"-12") FOR M.H. OUTSIDE 100-YR FLOOD PLAN.

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 2 OF 2



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	
RECORD COPY SIGNED BY BILL GARDNER	12/09/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–3 1 OF 4

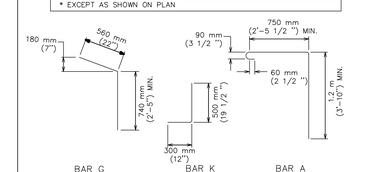


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	
RECORD COPY SIGNED BY BILL GARDNER	12/09/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–3 2 OF 4

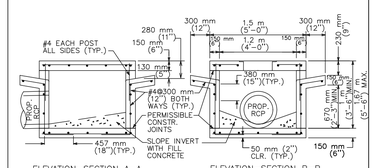
TABLE OF QUANTITIES
FOR 18" OUTLET PIPE
REINFORCING STEEL QUANTITIES

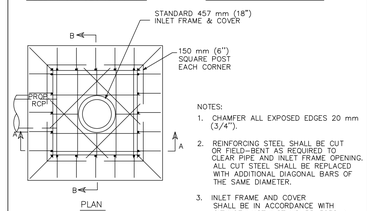
BARS	SIZE	SPACING	NUMBER	LENGTH	WEIGHT
A	4	230mm (9")*	15	2 m (7'–0")	73
B	4	250 mm (10")	4	3.25 m (10'–8")	29
C	4	460 mm (18")	7	760 mm (2'–6")	12
D	6	150 mm (6")	5	3.25 m (10'–8")	80
E	4	300 mm (12")	6	760 mm (2'–6")	10
F	4	250 mm (10")	3	4 m (13'–0")	35
G	4	300 mm (12")	11	1.25 m (4'–1")	31
H	6	—	1	4.25 m (14'–0")	20
J	4	300 mm (12")	7	3.25 m (10'–8")	50
K	4	230 mm (9")*	30	800 mm (2'–7 1/2")	52
L	4	300 mm (12")*	6	1.3 m (4'–4")	17
M	4	–	4	500 mm (1'–8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.06

* EXCEPT AS SHOWN ON PLAN



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	
RECORD COPY SIGNED BY BILL GARDNER	12/09/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–3 3 OF 4





NOTES:
1. CHAMFER ALL EXPOSED EDGES 20 mm (3/4").
2. REINFORCING STEEL SHALL BE CUT OR FIELD–BENT AS REQUIRED TO CLEAR PIPE AND INLET FRAME OPENING. ALL CUT STEEL SHALL BE REPLACED WITH ADDITIONAL DIAGONAL BARS OF THE SAME DIAMETER.
3. INLET FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S–1.
4. CONCRETE COVERAGE OF STEEL SHALL BE 50 mm (2") MIN. AT ALL SURFACES.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		4–SIDED AREA INLET	
RECORD COPY SIGNED BY ARTHUR C. ROMERO	08/18/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–9

NOTES:
1. ALL CONCRETE SHALL BE CLASS "A"
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. VERTICAL STEEL MAY BE SPLICED (380 mm or 15" MIN. LAP) IN THE LOWER ONE–HALF OF ALL INLET WALLS.5. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
6. QUANTITIES SHOWN HEREON ARE FOR THE CONTRACTOR'S INFORMATION ONLY. PAYMENT WILL BE MADE FOR EACH INLET OF THE TYPE SPECIFIED, COMPLETE IN PLACE INCLUDING MANHOLE FRAME AND OVER.
7. CHAMFER ALL EXPOSED EDGES 20 mm (3/4 ").
8. MANHOLE FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S–1.
9. THE CONTRACTOR MAY PROPOSE ALTERNATE PROCEDURES FOR THE CONSTRUCTION OF INLETS, INCLUDING PRECAST UNITS. PLANS FOR SUCH PROPOSED ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE CONSTRUCTION.
10. ALL INLET WALLS SHALL BE FORMED EXCEPT WHERE THE NATURE OF THE SURROUNDING MATERIAL IS SUCH THAT IT CAN BE TRIMMED TO A SMOOTH VERTICAL FACE. WHEN INLET WALLS ARE PLACED TO NEAT EXCAVATION LINES THE WALL THICKNESS SHALL NOT EXCEED 10 INCHES.
11. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB.
12. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE, SHAPED AS "V" SECTION
13. NO SPLICING OF REINFORCING STEEL SHALL BE PERMITTED UNLESS OTHERWISE NOTED ON THE PLANS OR PERMITTED IN WRITING BY THE ENGINEER.

REFERENCES:
FOR EXPANSION JOINT DOWEL AND DOWEL LOCATION DETAILS SEE STD. 430S–3, "CURB EXPANSION JOINT DOWEL DETAIL".
FOR 18" MANHOLE FRAME AND COVER DETAILS SEE STD. 503S–1, "18" COVER AND FRAME".

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL DETAILS FOR CURB INLET	
RECORD COPY SIGNED BY BILL GARDNER	12/09/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–3 4 OF 4

(25) BACKFILLING (FROM CITY OF AUSTIN SPECIFICATION 510)

(A) GENERAL

SPECIAL EMPHASIS IS PLACED UPON THE NEED TO OBTAIN UNIFORM DENSITY THROUGHOUT THE BACKFILL MATERIAL. THE MAXIMUM LIFT OF BACKFILL SHALL BE DETERMINED BY THE COMPACTION EQUIPMENT SELECTED AND IN NO CASE SHALL IT EXCEED 18 INCHES, LOOSE MEASUREMENT.

NO HEAVY EQUIPMENT, WHICH MIGHT DAMAGE PIPE, WILL BE ALLOWED OVER THE PIPE UNTIL SUFFICIENT COVER HAS BEEN PLACED AND COMPACTED. ALL INTERNAL PIPE BRACING INSTALLED OR RECOMMENDED BY THE MANUFACTURER SHALL BE KEPT IN PLACE UNTIL THE PIPE BEDDING AND TRENCH BACKFILL HAVE BEEN COMPLETED OVER THE BRACED PIPE SECTION. TESTING OF THE COMPLETED BACKFILL IN STREETS AND UNDER AND AROUND STRUCTURES SHALL MEET THE SPECIFIED DENSITY REQUIREMENTS. INITIAL TESTING SHALL NOT BE AT CONTRACTOR'S EXPENSE AND SHALL CONFORM TO THE "GENERAL CONDITIONS."

(B) GENERAL CONDITIONS METAL PIPE

AFTER THE CORRUGATED METAL PIPE STRUCTURE HAS BEEN COMPLETELY ASSEMBLED ON THE PROPER LINE AND GRADE AND HEADWALLS CONSTRUCTED WHERE INDICATED; SELECTED MATERIAL FREE FROM ROCKS OVER 8 INCHES IN SIZE FROM EXCAVATION OR BORROW, AS APPROVED BY THE E/A, SHALL BE PLACED ALONG BOTH SIDES OF THE COMPLETED STRUCTURES EQUALLY, IN UNIFORM LAYERS NOT EXCEEDING 6 INCHES IN DEPTH (LOOSE MEASUREMENT), SPRINKLED IF REQUIRED AND THOROUGHLY COMPACTED BETWEEN ADJACENT STRUCTURES AND BETWEEN THE STRUCTURES AND THE SIDES OF THE TRENCH.

BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY REQUIREMENTS AS INDICATED FOR THE ADJOINING SECTIONS OF EMBANKMENT IN ACCORDANCE WITH THE GOVERNING SPECIFICATIONS THEREOF. ABOVE THE ¼ POINT OF THE STRUCTURE, THE FILL SHALL BE PLACED UNIFORMLY ON EACH SIDE OF THE PIPE IN LAYERS NOT TO EXCEED 12 INCHES, LOOSE MEASURE.

PRIOR TO ADDING EACH NEW LAYER OF LOOSE BACKFILL MATERIAL, UNTIL A MINIMUM OF 12 INCHES OF COVER IS OBTAINED OVER THE CROWN OF THE PIPE, AN INSPECTION WILL BE MADE OF THE INSIDE PERIPHERY OF THE CORRUGATED METAL STRUCTURE TO DETERMINE IF ANY FLOATING, LOCAL OR UNEQUAL DEFORMATION HAS OCCURRED AS A RESULT OF IMPROPER CONSTRUCTION METHODS.

(C) BACKFILL MATERIALS

THE E/A MAY APPROVE ANY OF THE FOLLOWING WELL GRADED MATERIALS:

1. SELECT TRENCH MATERIAL
2. SAND
3. CRUSHED ROCK CUTTINGS
4. ROCK CUTTINGS
5. FOUNDATION ROCK
6. BLASTED MATERIAL WITH FINES AND ROCK
7. CEMENT STABILIZED MATERIAL
8. BORROW

WITHIN THE 100–YEAR FLOOD PLAIN, SAND WILL NOT BE PERMITTED FOR BACKFILLING. THE E/A WILL APPROVE THE TOPSOIL FOR AREAS TO BE SEEDED OR SODDED.

(D) BACKFILL IN STREET RIGHT OF WAY

PLACEMENT OF BACKFILL UNDER EXISTING OR FUTURE PAVEMENT STRUCTURES AND WITHIN 2 FEET OF ANY STRUCTURES SHALL BE COMPACTED TO THE REQUIRED DENSITY USING ANY METHOD, TYPE AND SIZE OF EQUIPMENT, WHICH WILL GIVE THE REQUIRED COMPACTION WITHOUT DAMAGING THE PIPE OR BEDDING. PLACEMENT OF BACKFILL GREATER THAN 2 FEET BEYOND STRUCTURES IN RIGHT OF WAY SHALL BE CONFORM TO

(a) BELOW THE DEPTH OF LAYERS, PRIOR TO COMPACTION, SHALL DEPEND UPON THE TYPE OF SPRINKLING AND COMPACTING EQUIPMENT USED AND THE TEST RESULTS THEREBY OBTAINED. PRIOR TO AND IN CONJUNCTION WITH THE COMPACTION OPERATION, EACH LAYER SHALL BE BROUGHT TO THE MOISTURE CONTENT NECESSARY TO OBTAIN THE REQUIRED DENSITY AND SHALL BE KEPT LEVEL TO INSURE UNIFORM COMPACTION OVER THE ENTIRE LAYER. TESTING FOR DENSITY SHALL BE IN ACCORDANCE WITH TEST METHOD TEX–114–E AND TEST METHOD TEX–115–E.

EACH LAYER OF BACKFILL MUST PROVIDE THE DENSITY AS REQUIRED HEREIN. SWELLING SOILS (SOILS WITH PLASTICITY INDEX OF 20 OR MORE) SHALL BE SPRINKLED AS REQUIRED TO PROVIDE NOT LESS THAN OPTIMUM MOISTURE NOR MORE THAN 2 PERCENT OVER OPTIMUM MOISTURE CONTENT AND COMPACTED TO THE EXTENT NECESSARY TO PROVIDE NOT LESS THAN 95 PERCENT NOR MORE THAN 102 PERCENT OF THE DENSITY AS DETERMINED IN ACCORDANCE WITH TEST METHOD TEX–114–E AND TEST METHOD TEX–115–E.

EACH LAYER OF BACKFILL MUST PROVIDE THE DENSITY AS REQUIRED HEREIN. SWELLING SOILS (SOILS WITH PLASTICITY INDEX OF 20 OR MORE) SHALL BE SPRINKLED AS REQUIRED TO PROVIDE NOT LESS THAN OPTIMUM MOISTURE NOR MORE THAN 2 PERCENT OVER OPTIMUM MOISTURE CONTENT AND COMPACTED TO THE EXTENT NECESSARY TO OBTAIN THE INDICATED COMPACTION AND THE COMPACTION METHOD SHALL BE ALTERED ON SUBSEQUENT WORK TO OBTAIN INDICATED DENSITY.

AT ANY TIME, THE E/A MAY ORDER PROOF ROLLING TO TEST THE UNIFORMITY OF COMPACTION OF THE BACKFILL LAYERS. ALL IRREGULARITIES, DEPRESSIONS, WEAK OR SOFT SPOTS THAT DEVELOP SHALL BE CORRECTED IMMEDIATELY BY THE CONTRACTOR.

SHOULD THE BACKFILL, DUE TO ANY REASON, LOSE THE REQUIRED STABILITY, DENSITY OR FINISH BEFORE THE PAVEMENT STRUCTURE IS PLACED, IT SHALL BE RECOMPACTED AND REFINISHED AT THE SOLE EXPENSE OF THE CONTRACTOR. EXCESSIVE LOSS OF MOISTURE IN THE SUBGRADE SHALL BE PREVENTED BY SPRINKLING, SEALING OR COVERING WITH A SUBSEQUENT BACKFILL LAYER OR GRANULAR MATERIAL. EXCESSIVE LOSS OF MOISTURE SHALL BE CONSTRUED TO EXIST WHEN THE SUBGRADE SOIL MOISTURE CONTENT IS MORE THAN 4 PERCENT BELOW THE OPTIMUM OF COMPACTION RATIO DENSITY. BACKFILL SHALL BE PLACED FROM THE TOP OF THE BEDDING MATERIAL TO THE EXISTING GRADE, BASE COURSE, SUBGRADE OR AS INDICATED. THE REMAINDER OF THE STREET BACKFILL SHALL BE FLEXIBLE BASE, CONCRETE OR HOT MIX ASPHALT CONCRETE AS INDICATED OR TO REPLACED IN KIND TO THE SURFACE REMOVED TO CONSTRUCT THE PIPE.

(E) BACKFILL IN COUNTY STREET OR STATE HIGHWAY RIGHT OF WAY

ALL WORK WITHIN THE RIGHT–OF–WAY SHALL MEET THE REQUIREMENTS OF (D) ABOVE, AS A MINIMUM AND SHALL MEET THE REQUIREMENTS OF THE PERMIT ISSUED BY THE COUNTY WHEN THEIR REQUIREMENTS ARE MORE STRINGENT. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE TXDOT OFFICE OR COUNTY COMMISSIONER'S PRECINCT OFFICE AND FOLLOWING THE OPERATING PROCEDURES IN EFFECT FOR UTILITY CUT PERMITS AND PAVEMENT REPAIR UNDER THEIR JURISDICTION. APPROVAL FOR ALL COMPLETED WORK IN THE STATE OR COUNTY RIGHT–OF–WAY SHALL BE OBTAINED FROM THE APPROPRIATE OFFICIAL PRIOR TO FINAL PAYMENT BY THE OWNER.

(F) BACKFILL IN RAILROAD RIGHT–OF–WAY

ALL WORK WITHIN THE RAILROAD RIGHT–OF–WAY SHALL MEET THE REQUIREMENTS OF (D) ABOVE, AS A MINIMUM AND SHALL MEET THE REQUIREMENTS OF THE PERMIT ISSUED BY THE RAILROAD OWNER WHEN THEIR REQUIREMENTS ARE MORE STRINGENT. APPROVAL FOR ALL COMPLETED WORK IN THE RAILROAD RIGHT OF WAY SHALL BE OBTAINED FROM THE RAILROAD PRIOR TO FINAL COMPLETION.

(G) BACKFILL IN EASEMENTS

WHERE NOT OTHERWISE INDICATED, CONTRACTOR MAY SELECT WHATEVER METHODS AND PROCEDURES MAY BE NECESSARY TO RESTORE ENTIRE WORK AREA TO A SAFE, USEFUL AND GEOLOGICALLY STABLE CONDITION WITH A MINIMUM DENSITY OF 85 PERCENT OR A DENSITY SUPERIOR TO THAT PRIOR TO CONSTRUCTION.

IN AND NEAR FLOOD PLAIN OF ALL STREAMS AND WATERCOURSES, UNDER OR ADJACENT TO UTILITIES, STRUCTURES, ETC. ALL BACKFILL SHALL BE COMPACTED TO A DENSITY OF NOT LESS THAN 95 PERCENT CONFORMING TO TXDOT TEST METHOD TEX–114–E, UNLESS OTHERWISE DIRECTED BY E/A.

ALL SOIL AREAS DISTURBED BY CONSTRUCTION SHALL BE COVERED WITH TOP SOIL AND SEEDED CONFORMING TO ITEM NO. 604, "SEEDING FOR EROSION CONTROL". ALL TURF, DRAINWAYS AND DRAINAGE STRUCTURES SHALL BE CONSTRUCTED OR REPLACED TO THEIR ORIGINAL CONDITION OR BETTER. NO DEBRIS SHALL REMAIN IN THE DRAINWAYS OR DRAINAGE STRUCTURES.

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions
3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

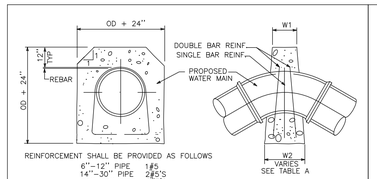
REVISIONS

NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

STORM SEWER DETAILS



VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

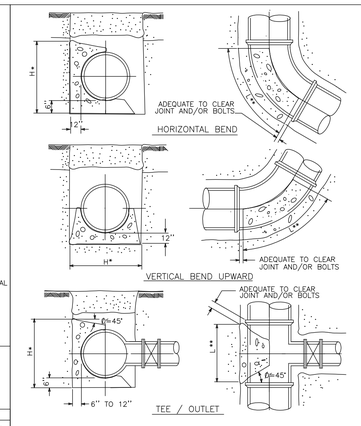
PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH W2 (in)
6"	6"	0–5	NOTE 2
		5–15	24
		15–25	48
		► 25	NOTE 1
8"	6"	0–5	NOTE 2
		5–9	30
		9–15	36
		► 15	NOTE 1
12"	6"	0–5	NOTE 2
		5–15	48
		► 15	NOTE 1
16"	12"	0–5	NOTE 2
		5–10	60
		10–15	96
		► 15	NOTE 1
24" THRU 36" DIA.		► 5.0	NOTE 1
42" THRU 48" DIA.		► 3.0	NOTE 1

NOTES:
1– FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINED JOINTS SHALL BE INSTALLED
2– FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" IN DIAMETER.

THRUST BLOCK DESIGN AS FOLLOWS
A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE
B. MAXIMUM SOIL BEARING SEE TABLE BELOW

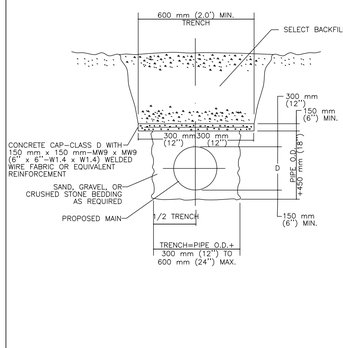
SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb/Sq.Ft.
UNDISTURBED SOIL, CALICHE	2000 Lb/Sq.Ft.
LIMESTONE ROCK	4000 Lb/Sq.Ft.

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE THRUST BLOCKING		
RECORD COPY SIGNED BY JAMES E. THOMPSON	2/11/86	ADOPTED: 2/11/86 SCALE: N.T.S. INITIAL:		STANDARD NO. 510–6 1 OF 2
APPROVED	DATE			

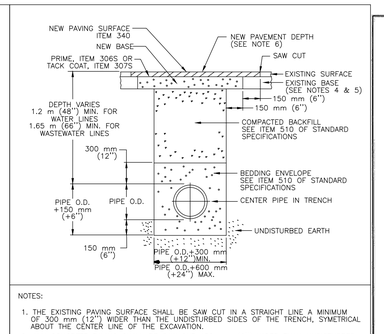


* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE THRUST BLOCKING		
RECORD COPY SIGNED BY JAMES E. THOMPSON	2/11/86	ADOPTED: 2/11/86 SCALE: N.T.S. INITIAL:		STANDARD NO. 510–6 2 OF 2
APPROVED	DATE			

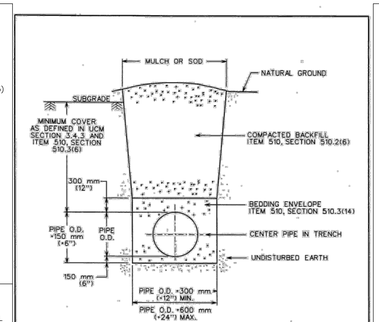


CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE TRENCH CAP		
RECORD COPY SIGNED BY KATHI F. PAYNE	2/17/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		STANDARD NO. 510S–1



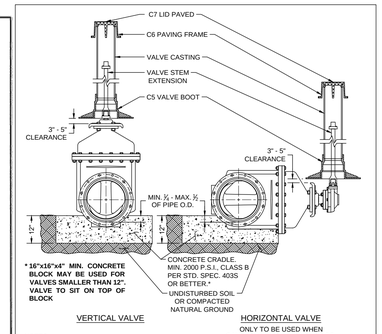
NOTES:
1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE A MINIMUM OF 300 mm (12") WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
2. CONCRETE PAVING SHALL BE SAW CUT 150 mm (6") WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX ASPHALTIC CONCRETE.
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND OF EQUAL THICKNESS, OR MINIMUM BASE THICKNESS OF 250 mm (10"), WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 200 mm (8") OF BASE OR MATCH EXISTING THICKNESS, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 50 mm (2"), WHICHEVER IS GREATER.

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		TYPICAL TRENCH WITH PAVED SURFACE		
RECORD COPY SIGNED BY KATHI L. FLOWERS	8/19/02 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		STANDARD NO. 510S–3



REFERENCES:
1. UTILITY CRITERIA MANUAL SECTION 3.4.3, "FINAL DESIGN"
2. STANDARD SPECIFICATION MANUAL ITEM 510,
SECTION 510.2(6), "SELECT BACKFILL OR BORROW";
SECTION 510.3(6), "TRENCH DEPTH AND DEPTH OF COVER";
SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL TRENCH DETAIL WITH UNFINISHED SURFACE	
Joe Anderson	3/12/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 510S–5



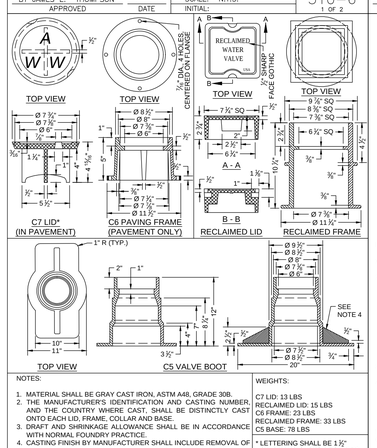
VERTICAL VALVE

HORIZONTAL VALVE
ONLY TO BE USED WHEN CALLED OUT ON THE DRAWINGS.

NOTES:
1. WELD SOCKET 2½" x 2" DEEP TO 1" SCH. 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT. [SCH. 80 FOR LENGTHS OVER 10']
2. VALVE CASTING SHALL BE 6" DI PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE STEM EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE **"RECLAIMED WATER"** CAST INTO THEM.

CITY OF AUSTIN AUSTIN WATER		TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS	05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-01 1 OF 4

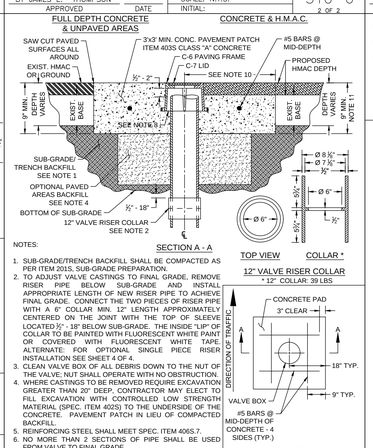


NOTES:
1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID, FRAME, COLLAR AND BASE.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. CASTING FINISH BY MANUFACTURER SHALL INCLUDE REMOVAL OF FINS AND FLASHING, AND PAINT WITH BLACK ASPHALT COATING.

WEIGHTS:
C7 LID: 13 LBS
RECLAIMED LID: 15 LBS
C6 FRAME: 23 LBS
RECLAIMED FRAME: 33 LBS
C5 BASE: 78 LBS

* LETTERING SHALL BE 1½"
2 PICK BAR SLOTS REQUIRED

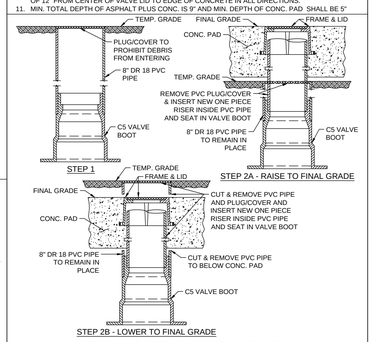
CITY OF AUSTIN WATER AND WASTEWATER UTILITY		FULL DEPTH CONCRETE & UNPAVED AREAS / CONCRETE & H.M.A.C.		
RECORD COPY SIGNED BY JAMES E. THOMPSON	2/11/86	ADOPTED: 2/11/86 SCALE: N.T.S. INITIAL:		STANDARD NO. 510–6 2 OF 2
APPROVED	DATE			



NOTES:
1. SUB-GRADE/TRENCH BACKFILL SHALL BE COMPACTED AS PER ITEM 201S, SUB-GRADE PREPARATION.
2. TO ADJUST VALVE CASTINGS TO FINAL GRADE, REMOVE RISER PIPE BELOW SUB-GRADE AND INSTALL APPROPRIATE LENGTH OF NEW RISER PIPE TO ACHIEVE FINAL GRADE. CONNECT THE TWO PIECES OF RISER PIPE WITH A 6" COLLAR MIN. 12" LENGTH APPROXIMATELY CENTERED ON THE JOINT WITH THE TOP OF SLEEVE LOCATED ½" - 18" BELOW SUB-GRADE. THE INSIDE "LIP" OF COLLAR TO BE PAINTED WITH FLUORESCENT WHITE PAINT OR COVERED WITH FLUORESCENT WHITE TAPE. ALTERNATE: FOR OPTIONAL SINGLE PIECE RISER INSTALLATION SEE SHEET 4 OF 4.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE NUT OF THE VALVE; NUT SHALL OPERATE WITH NO OBSTRUCTION.
4. WHERE CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL (SPEC. ITEM 402S) TO THE UNDERSIDE OF THE CONCRETE. PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
5. REINFORCING STEEL SHALL MEET SPEC. ITEM 406S.7.
6. NO MORE THAN 2 SECTIONS OF PIPE SHALL BE USED FROM VALVE TO FINAL GRADE.
7. BELL AND SPIGOT IS ACCEPTABLE FOR DEPTH OVER 18'.

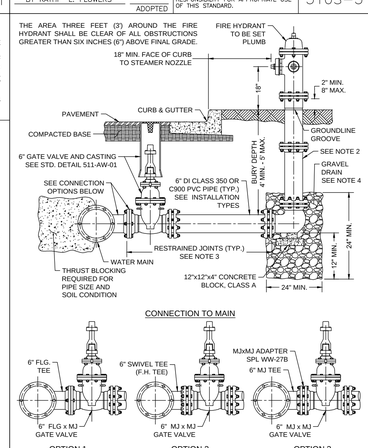
CITY OF AUSTIN AUSTIN WATER		TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS	05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-01 3 OF 4

NOTES (CONT):
8. PAVING FRAME SHALL BE FLUSH WITH THE CONC. PAD AND PLACED ½" - 2" ABOVE RISER PIPE (FRAME SHALL NOT REST ON RISER.)
9. IN UNPAVED AREAS, INSTALL ONE DELINEATOR STAKE IMMEDIATELY ADJACENT TO THE EDGE OF THE CONCRETE PAD. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER AND SHALL EXTEND AT LEAST 8" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES.
10. VALVE SHALL TYPICALLY BE CENTERED IN CONCRETE DIAMOND BUT MAY BE OFFSET WITH A MIN. OF 12" FROM CENTER OF VALVE LID TO EDGE OF CONCRETE IN ALL DIRECTIONS.
11. MIN. TOTAL DEPTH OF ASPHALT PLUS CONC. IS 9" AND MIN. DEPTH OF CONC. PAD SHALL BE 5"

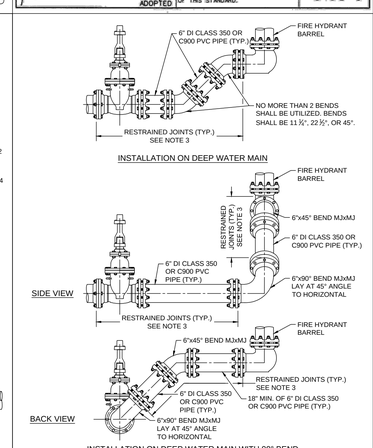


CITY OF AUSTIN AUSTIN WATER		TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS	05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-01 4 OF 4

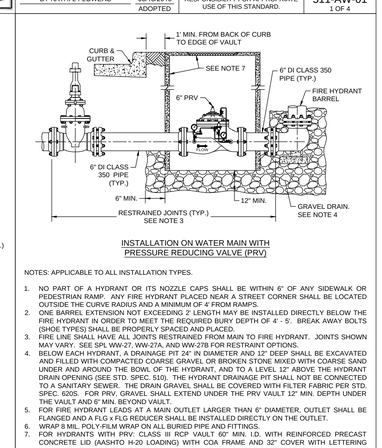
THE AREA THREE FEET (3) AROUND THE FIRE HYDRANT SHALL BE CLEAR OF ALL OBSTRUCTIONS GREATER THAN SIX INCHES (6") ABOVE FINAL GRADE.



CITY OF AUSTIN AUSTIN WATER		FIRE HYDRANT		
RECORD COPY SIGNED BY KATHI L FLOWERS	05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		STANDARD NO. 511-AW-02 1 OF 3



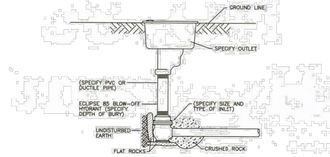
CITY OF AUSTIN AUSTIN WATER		FIRE HYDRANT		
RECORD COPY SIGNED BY KATHI L FLOWERS	05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		STANDARD NO. 511-AW-02 2 OF 3



NOTES: APPLICABLE TO ALL INSTALLATION TYPES.
1. NO PART OF A HYDRANT OR ITS NOZZLE CAPS SHALL BE WITHIN 6" OF ANY SIDEWALK OR PEDESTRIAN RAMP. ANY FIRE HYDRANT PLACED NEAR A STREET CORNER SHALL BE LOCATED OUTSIDE THE CURVE RADIUS AND A MINIMUM OF 4' FROM RAMPS.
2. ONE BARREL EXTENSION NOT EXCEEDING 2' LENGTH MAY BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT IN ORDER TO MEET THE REQUIRED BURY DEPTH OF 4' - 5'. BREAK AWAY BOLTS (SHOE TYPES) SHALL BE PROPERLY SPACED AND PLACED.
3. FIRE LINE SHALL HAVE ALL JOINTS RESTRAINED FROM MAIN TO FIRE HYDRANT. JOINTS SHOWN MAY VARY. SEE SPL WW-27, WW-27A, AND WW-27B FOR RESTRAINT OPTIONS.
4. BELOW EACH HYDRANT, A DRAINAGE PIT 24" IN DIAMETER AND 12" DEEP SHALL BE EXCAVATED AND FILLED WITH COMPACTED COARSE GRAVEL OR BROKEN STONE MIXED WITH COARSE SAND UNDER AND AROUND THE BOWL OF THE HYDRANT, AND TO A LEVEL 12" ABOVE THE HYDRANT DRAIN OPENING (SEE STD. SPEC. 510). THE HYDRANT DRAINAGE PIT SHALL NOT BE CONNECTED TO A SANITARY SEWER. THE DRAIN GRAVEL SHALL BE COVERED WITH FILTER FABRIC PER STD. SPEC. 620S. FOR PRV, GRAVEL SHALL EXTEND UNDER THE PRV VAULT 12" MIN. DEPTH UNDER THE VAULT AND 6" MIN. BEYOND VAULT.
5. FOR FIRE HYDRANT LEADS AT A MAIN OUTLET LARGER THAN 6" DIAMETER, OUTLET SHALL BE FLANGED AND A FLG x FLG REDUCER SHALL BE INSTALLED DIRECTLY ON THE OUTLET.
6. WRAP 8 MIL POLY-FILM WRAP ON ALL BURIED PIPE AND FITTINGS.
7. FOR HYDRANTS WITH PRV: CLASS III RCP VAULT 60" MIN. I.D. WITH REINFORCED PRECAST CONCRETE LID (AASHTO H-20 LOADING) WITH COA FRAME AND 32" COVER WITH LETTERING MODIFIED FOR WATER.

CITY OF AUSTIN AUSTIN WATER		FIRE HYDRANT		
RECORD COPY SIGNED BY KATHI L FLOWERS	05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		STANDARD NO. 511-AW-02 3 OF 3

NON-TRAFFIC INSTALLATION

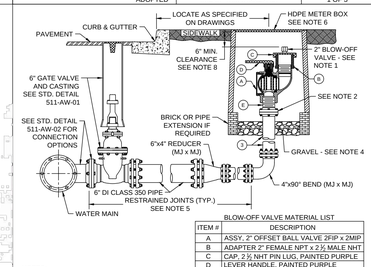


Hydrants shall be self–draining, non–freezing, compression type with 2–3/16" main valve opening. Inlet connection shall be (1–1/4"IP, 1–1/2"IP, 2"IP, 2–1/2"IP, 3"IP, 2"MJ or 3"MJ). Outlet size shall be (any size up to 2–1/2"NST).

Hydrant shall have cast iron box, locking lid, and 3" schedule 80 PVC riser pipe (3" ductile iron pipe also available). Principal interior operating parts shall be brass and removable from the hydrant for servicing without excavating the hydrant.

Hydrants shall be set in 4 cubic feet of crushed stone to allow for proper drainage of the hydrant. Recommendations of the AWWA should be followed for installation of the hydrants.

Blow–Off Hydrants shall be Eclipse No. 85 Box Hydrant as manufactured by John C. Kupferle Foundry Company, St. Louis, MO.



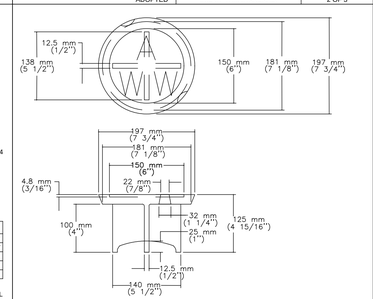
ITEM #	DESCRIPTION
A	ASSY, 2" OFFSET BALL VALVE 2FIP x 2MIP
B	ADAPTER 2" FEMALE NPT x 2½ MALE NHT
C	CAP, 2½ NHT PIN LUG, PAINTED PURPLE
D	LEVER HANDLE, PAINTED PURPLE
E	2" NIPPLE 4" LONG

BLOW-OFF VALVE MATERIAL LIST

NOTES:
1. 2" BLOW-OFF VALVE FOR RECLAIMED WATER PER SPL WW-3A.
2. 2"x9" 125# REDUCING COMPANION FLANGE (MANUFACTURED BY SMITH-COOPER INTERNATIONAL OR EQUIVALENT.)
3. 4" DI CLASS 350 PIPE (PE x FLG).
4. 6" MIN. DEPTH COMPACTED COARSE GRAVEL OR BROKEN STONE.
5. BLOW-OFF VALVE SHALL HAVE ALL JOINTS RESTRAINED FROM MAIN TO BLOW-OFF VALVE. JOINTS SHOWN MAY VARY. SEE SPL WW-27, WW-27A, AND WW-27B FOR RESTRAINT OPTIONS.
6. HDPE METER BOX SHALL BE RECTANGULAR, COMMERCIAL METER BOX FOR RECLAIMED WATER PER SPL WW-145A.
7. METER BOX AND BLOW-OFF VALVE SHALL NOT BE LOCATED IN A SIDEWALK, DRIVEWAY, PEDESTRIAN WAY OR TRAFFIC WAY. BLOW-OFF VALVES SHALL BE LOCATED AS SHOWN ON APPROVED PLANS.
8. BLOW-OFF VALVE MUST BE FREE TO MOVE VERTICALLY WITHIN THE METER BOX, IN ORDER TO PREVENT THE TRANSMISSION LOADS TO THE BLOW-OFF VALVE.

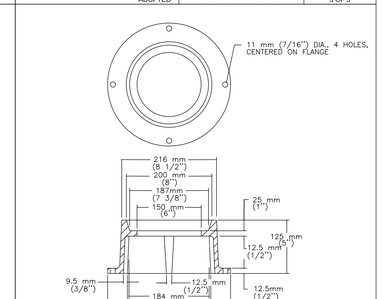
RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE **"RECLAIMED WATER"** CAST INTO THEM.

CITY OF AUSTIN AUSTIN WATER		2" NON - TRAFFIC RATED, RECLAIMED BLOW-OFF VALVE		
RECORD COPY SIGNED BY KATHI L FLOWERS	05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		STANDARD NO. 511-AW-06 1 OF 1

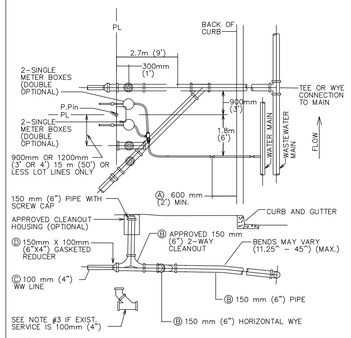


NOTES:
1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. TYPICAL FILLET IS 4.8 mm (3/16 ") RADIUS
3. LETTERING SHALL BE 38 mm (1 1/2 ") HEIGHT AND LOCATED AS SHOWN.
4. THIS LID REQUIRES TWO (2) PICK SLOTS.
5. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORD WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINS AND FLASHING; PAINT WITH BLACK ASPHALT COATING.
8. WEIGHT: APPROXIMATELY 6 kg (13 lbs).

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		VALVE BOX CASTING C–7 LID		
RECORD COPY SIGNED BY KATHI F. PAYNE	4/5/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.		STANDARD NO. 511S–12



NOTES:
1. MATERIALS SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION & CASTING NUMBER & THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH RING.
3. DRAFT & SHRINKAGE ALLOWANCE SHALL BE IN ACC



NOTES:

Ⓐ THESE DIMENSIONS MAY BE INCREASED BY WIDTH OF WALK IF WALK IS LOCATED AT CURB.

Ⓑ TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION.

Ⓒ BUILDING INSPECTION DEPARTMENT SHALL INSPECT CUSTOMER'S WASTEWATER LINE, EXCEPT CONNECTION AT WYE, AND WATER LINE TO CUSTOMER'S SHUT-OFF-VALVE.

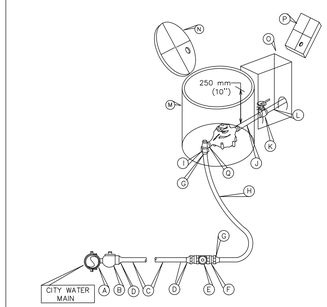
Ⓓ TAPS INSPECTION OFFICE INSPECTS CONNECTIONS OF CUSTOMER'S WATER AND WASTEWATER LINES TO CITY SYSTEMS.

NOTES:

1. DURING SUBDIVISION CONSTRUCTION UTILITY CONTRACTOR INSTALLS WASTEWATER CONNECTION TO MAIN. 150mm (6") STUB WITH HORIZONTAL WYE FOR DOUBLE SERVICES, 150mm (6") SERVICE BRANCH WITH 2-WAY-CLEANOUT(S) AND RISER FOR CLEANOUT(S) (CAPPED), AND PLUG(S) FOR 2-WAY-CLEANOUT(S) AT PROPERTY LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 1% (.264mm (1/8") PER FOOT) MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 1.22m (4'). OTHERWISE THE INSTALLED DEPTH WILL TYPICALLY BE 1.22m (4') TO 1.8m (6'). IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL 520-6. UTILITY CONTRACTOR ALSO INSTALLS WATER CONNECTION TO MAIN WATER PIPE, FITTINGS AND VALVES INCLUDING STOP VALVE-REFER TO DETAIL 520S-7 AND 9 FOR LOCATION OF STOP VALVES. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY CITY OF AUSTIN CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER REMOVES PLUG FROM 2-WAY-CLEANOUT AT PROPERTY LINE, INSTALLS 150mm X 100mm (6" X 4") ELASTOMERIC GASKETED BELL REDUCER (SPL WW-27-B). A BUSHING WILL NOT BE ALLOWED. AS AN ALTERNATE, CUSTOMER MAY INSTALL MINIMUM 450MM (18") LENGTH OF 150mm (6") PIPE, INSTALL 100 mm (4") WASTEWATER LINES, EXTEND 100mm (4") PIPE 150mm (6") MINIMUM INTO 150mm (6") PIPE AND JOINT WITH FLEXIBLE ADAPTER (SPL WW-354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE FLEXIBLE ADAPTER. BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM. CUSTOMER ALSO INSTALLS WATER LINES INCLUDING FITTINGS AND VALVES ON BOTH SIDES OF METER, INSTALL METER BOXES AND COVERS. ALL IN ACCORDANCE WITH INFORMATION ON APPLICABLE STANDARD DRAWING. A VENTED SPACER MAY BE USED TO ASSURE PROPER SPACING AND ALIGNMENT OF METER FITTINGS.
3. IF EXISTING WASTEWATER SERVICE IS 100mm (4"), CUSTOMER SHALL INSTALL A 100mm (4") ELASTOMERIC GASKETED WYE AND VERTICAL 45 DEGREE BEND IN PLACE OF THE 2-WAY CLEANOUT.
4. IF EXISTING SERVICE IS NOT PVC, THE CUSTOMER SHALL INSTALL A FLEXIBLE ADAPTER (SPL WW-354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE ADAPTER TO TRANSITION TO PVC. THE SUPPORT BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER.
5. CUSTOMER IS RESPONSIBLE FOR METER BOX AND PIPING SYSTEM UNTIL METER IS INSTALLED AND WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO CITY SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL VALVES AND STOPS, METER BOX AND 2-WAY-CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
6. CITY OF AUSTIN ACTIVITY IS LIMITED TO INSTALLATION OF THE WATER METER AND INSPECTION OF CONNECTIONS TO THE CITY'S WATER AND WASTEWATER SYSTEMS. FOR MAINTENANCE PURPOSES, THE CITY'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WATER CUT-OFF VALVE AND AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY-CLEANOUT.
7. PIPING AND TUBING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION SECTION 510.3 (14); MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B); BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESES AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 1.07m (42"). ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.
8. NO METER BOX OR CLEAN OUT SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM AUSTIN WATER UTILITY.

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-3 1 OF 2

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-3 2 OF 2



METER BOX DIMENSION			
	Inside Dia.	Outside Dia.	Ht.
Top Dia.	450 mm (18")	600 mm (24")	363 mm (14½")
Bot. Dia.	550 mm (22")	650 mm (26")	

METER SIZE	LENGTH
16 mm (⅝")	194 mm (7⅝")
19 mm (¾")	225 mm (9")
25 mm (1")	275 mm (11")

MATERIAL LIST

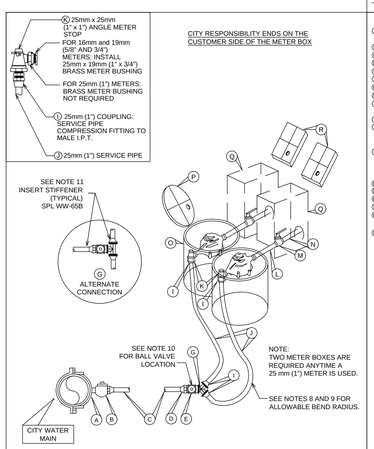
A. SERVICE CLAMP REQUIRED ON ALL PLASTIC AND ASBESTOS CEMENT PIPE AND ON ALL IRON PIPE 300 mm (12") AND SMALLER
B. 38 mm (1 1/2) CORPORATION STOP-SERVICE PIPE OUTLET. SPL #WW68
C. 38 mm (1 1/2) SERVICE PIPE
D. 38 mm (1 1/2) COUPLING: SERVICE PIPE TO MALE I.P.T. (COMPRESSION FITTING)
E. 38 mm (1 1/2) BALL VALVE. SEE SPL WW 275.
F. BRONZE BUSHING, 38 mm X 25 mm (1 1/2" X 1") I.P. THREADS
G. 25 MM (1") COUPLING: SERVICE PIPE TO MALE I.P.T. (COMPRESSION FITTING)
H. 25 mm (1") SERVICE PIPE
I. ANGLE METER STOP: SERVICE PIPE INLET X SWIVEL COUPLING NUT OUTLET AND BRASS BUSHING:
-FOR 16 mm AND 19 mm (⅝" AND ¾") METERS: 25 mm X 19 mm (1" X ¾")
-FOR 25 mm (1") METERS, 25 mm X 25 mm (1" X 1") AND 25 mm X 19 MM (1" X¾") BRASS BUSHING.
A 25 mm X 19 mm (1" X ¾") METER BUSHING IS REQUIRED AT THE ANGLE STOP TO BE INSTALLED BY PLUMBER FOR ALL 16 mm (⅝") AND 19 mm (¾") METERS. SPL WW-68.
J. WATER METER COUPLING: MALE I.P.T. X SWIVEL COUPLING NUT:
-FOR 16 mm AND 19 mm (⅝" AND ¾") METERS: 19 mm X 213 mm (¾" X 8⅜") LONG
-FOR 25 mm (1") METERS: 25 mm X 213 mm (1" X 8⅜") LONG
K. BALL VALVE. SEE SPL WW 276. 19 mm OR 25 mm (¾" OR 1 ") (PROPERTY OWNER'S CUT-OFF VALVE)
L. 19 mm OR 25 mm (¾" OR 1") PIPE MEETING CITY OF AUSTIN PLUMBING CODE REQUIREMENTS
M. METER BOX PER STANDARD PRODUCTS LIST- SPL WW-145 OR WW-145A.
N. METAL LID-FOR METER BOX, AUSTIN PIPE AND SUPPLY CO. OR APPROVED EQUAL; OR LID FURNISHED WITH APPROVED BOX. FOR VALVE BOX, TYLER PIPE, WESTERN IRON WORKS OR APPROVED EQUAL.
O. PROPERTY OWNER'S CUT-OFF VALVE BOX-RETANGULAR PLASTIC BOX, DFW #D1200 OR EQUAL.
P. RECTANGULAR PLASTIC BOX LID, DFW #D1200, 300 mm X 425 mm X 300 mm (12" X 17" X 12") OR EQUAL.
Q. ANGLE METER STOP: SERVICE PIPE INLET X SWIVEL COUPLING NUT OUTLET:
-FOR 16 mm AND 19 mm (⅝" AND ¾") METERS: 25 mm X 19 mm (1" X ¾")
-FOR 25 mm (1") METERS: 25 mm X 25 mm (1" X 1")

NOTES:

1. SERVICE PIPE SHALL BE COPPER TUBE SIZE. IT SHALL BE ANNEALED SEAMLESS TYPE "K" COPPER TUBING MEETING THE CURRENT ASTM B88 STANDARD WITH NO SWEAT OR SOLDERED JOINTS.
2. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 0.2 mm (8 MIL) POLYETHYLENE FILM.
3. TOP OF BOXES SHOULD BE 25 mm (1") ABOVE GROUND OR FLUSH WITH PAVEMENT SURFACE.
4. PIPING AND TUBING IN STREET RIGHT-OF-WAY SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY SECTION 510.3 (14) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS: BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED BY SECTION 510.3 (25).
5. BOX MUST BE BEHIND CURB NEXT TO PROPERTY LINE AND/OR SIDEWALK AND OUT OF VEHICULAR TRAFFIC AREA.
6. IF POLYETHYLENE TUBING IS USED, SEE STANDARD #520-14, P.E. WATER SERVICE CASING DETAIL, COMPRESSION FITTING REQUIRED WITH STEEL PIPE STIFFNER INSERT.

CITY OF AUSTIN AUSTIN WATER UTILITY		STANDARD INSTALLATION FOR A 16mm, 19mm OR 25mm (⅝",¾" OR 1") METER	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-11 1 OF 2

CITY OF AUSTIN AUSTIN WATER UTILITY		STANDARD INSTALLATION FOR A 16mm, 19mm OR 25mm (⅝",¾" OR 1") METER	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-11 2 OF 2



MATERIAL LIST

Ⓐ SERVICE CLAMP REQUIRED ON ALL PLASTIC AND ASBESTOS CEMENT PIPE AND ON ALL IRON PIPE 300 mm (12") AND SMALLER
Ⓑ 50mm (2") CORPORATION STOP-MALE THREAD INLET BY COMPRESSION OUTLET, SPL WW-68
Ⓒ 50mm (2") SERVICE TUBING PER SPL WW-65
Ⓓ COUPLING: 50mm (2") COMPRESSION TO 38mm (1-1/2") MALE I.P.T.
Ⓔ 38mm (1-1/2") BALL VALVE; SEE SPL WW-275 AND NOTE 10.
Ⓕ N/A
Ⓖ 38mm (1-1/2") x 25mm (1") BRONZE WYE. SPL WW-68 OR TEE (ALTERNATE CONNECTION)
Ⓗ N/A
Ⓘ 25mm (1") COUPLING: SERVICE TUBING TO MALE I.P.T. (COMPRESSION FITTING) W/STIFFENER PER SPL WW-65B
Ⓙ 25mm (1") SERVICE TUBING
Ⓚ 25mm (1") ANGLE METER STOP; SERVICE TUBING INLET x SWIVEL COUPLING NUT OUTLET, AND 25mm x 19mm (1" x 3/4") BRASS BUSHING. A 25mm x 19mm (1" x 3/4") METER BUSHING IS REQUIRED AT THE ANGLE STOP TO BE INSTALLED BY PLUMBER FOR ALL 16mm (5/8") AND 19mm (3/4") METERS. SPL WW-68
Ⓛ WATER METER COUPLING: MALE I.P.T. x SWIVEL COUPLING NUT:
-FOR 16mm AND 19mm (5/8" AND 3/4") METERS: 19mm x 213mm (3/4"x8-1/2") LONG
-FOR 25mm (1") METERS: 25mm x 213mm (1" x 8-1/2") LONG
Ⓜ CUSTOMER BALL VALVE 25mm (1") SEE SPL WW-276.
Ⓝ 25mm (1") TUBING MEETING CITY OF AUSTIN PLUMBING CODE REQUIREMENTS
Ⓞ METER BOX PER SPL WW-145 OR WW-145A
Ⓟ AMRAMI READY LID-FOR METER BOX FURNISHED WITH APPROVED BOX.
Ⓠ RECTANGULAR BOX FOR CUSTOMER'S CUT-OFF VALVE AND PRV (WHEN REQ'D.) 300mm x 425mm x 300mm (12"x17"x12") OR EQUAL. SIZE MAY VARY WITH PRV AND SHOULD BE SIZED FOR OPERATION OF BALL VALVE. SEE SPL WW-145A.
Ⓡ RECTANGULAR PLASTIC BOX LID, 300mm x 425mm x 300mm (12" x 17" x 12") OR EQUAL. SEE SPL WW-145A.

NOTES:

1. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 0.2 mm (8 MIL) POLYETHYLENE FILM.
2. BRANCH CONNECTION AND BOTH ANGLE METER STOPS MUST BE INSTALLED PRIOR TO FIRST METER INSTALLATION EVEN THOUGH SECOND PROPERTY MAY NOT BE READY FOR SERVICE.
3. TOP OF BOXES SHOULD BE 25mm (1") ABOVE GROUND OR FLUSH WITH PAVEMENT SURFACE.
4. PIPING AND TUBING IN STREET RIGHT-OF-WAY SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY SECTION 510.3 (14) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS: BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED BY SECTION 510.3 (25).
5. BOX MUST BE BEHIND CURB NEXT TO PROPERTY LINE AND/OR SIDEWALK AND OUT OF VEHICULAR TRAFFIC AREA.
6. INSTALL METALLIC WARNING TAPE MIN. 1' ABOVE P.E. TUBING FROM TAP CONNECTION TO METER.
7. TUBING SHALL BE PLACED SO THAT IT IS RELAXED AND "SNAKES" LOOSELY IN THE TRENCH.
8. TUBING, WHEN BENT, SHALL HAVE A RADIUS NO SMALLER THAN THE VALUE SHOWN IN TABLE 1.
9. IF A FITTING WILL BE INSTALLED WITHIN A BENT SECTION OF TUBING, THE TUBING SHALL SHALL HAVE A RADIUS NO SMALLER THAN THE VALUE SHOWN IN TABLE 2.
10. B.V. (E) SHALL NOT BE LOCATED UNDER CURB OR PAVEMENT, AND NOT BE LOCATED MORE THAN 600mm (24") HORIZONTALLY FROM METER BOX OR 900mm (36") BELOW FINAL GRADE.
11. INSERT STIFFENERS FOR P.E. TUBING PER SPL WW-65B TO BE INSTALLED INSIDE TUBING AT ALL COMPRESSION FITTINGS.

TABLE 1 (SEE NOTE 8)	
Nominal Tubing Dia.	Bend Radius of at Least
25mm (1")	0.9m (3')
38mm (1-1/2")	1.2m (4')
50mm (2")	1.5m (5')

TABLE 2 (SEE NOTE 9)	
Nominal Tubing Dia.	Bend Radius of at Least
25mm (1")	3.66m (12')
38mm (1-1/2")	4.86m (16')
50mm (2")	6.06m (20')

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 1 OF 3

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 2 OF 3

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 3 OF 3

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

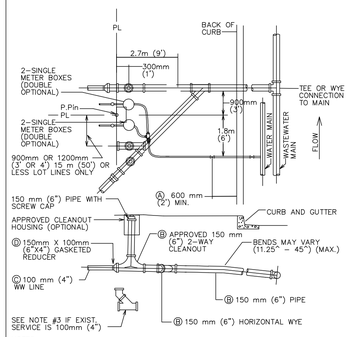
NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

WATER DETAILS 2 OF 2

T:\Private\Master\Crescent Belterra\Design\Ph 2 SEC 21\Site Construction\S-DESBELTRA-PH2_SEC21-WTD.dwg



NOTES:

Ⓐ THESE DIMENSIONS MAY BE INCREASED BY WIDTH OF WALK IF WALK IS LOCATED AT CURB.

Ⓑ TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION.

Ⓒ BUILDING INSPECTION DEPARTMENT SHALL INSPECT CUSTOMER'S WASTEWATER LINE, EXCEPT CONNECTION AT WYE, AND WATER LINE TO CUSTOMER'S SHUT-OFF-VALVE.

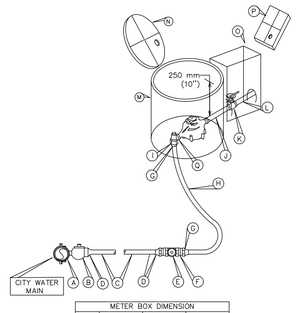
Ⓓ TAPS INSPECTION OFFICE INSPECTS CONNECTIONS OF CUSTOMER'S WATER AND WASTEWATER LINES TO CITY SYSTEMS.

NOTES:

1. DURING SUBDIVISION CONSTRUCTION UTILITY CONTRACTOR INSTALLS WASTEWATER CONNECTION TO MAIN. 150mm (6") STUB WITH HORIZONTAL WYE FOR DOUBLE SERVICES, 150mm (6") SERVICE BRANCH WITH 2-WAY-CLEANOUT(S) AND RISER FOR CLEANOUT(S) (CAPPED), AND PLUG(S) FOR 2-WAY-CLEANOUT(S) AT PROPERTY LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 1% (.26 4mm (1/8") PER FOOT) MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 1.22m (4'). OTHERWISE THE INSTALLED DEPTH WILL TYPICALLY BE 1.22m (4') TO 1.8m (6'). IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL 520-6. UTILITY CONTRACTOR ALSO INSTALLS WATER CONNECTION TO MAIN WATER PIPE FITTINGS AND VALVES INCLUDING STOP VALVE–REFER TO DETAIL 520S-7 AND 8 FOR LOCATION OF STOP VALVES. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY CITY OF AUSTIN CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER REMOVES PLUG FROM 2-WAY-CLEANOUT AT PROPERTY LINE, INSTALLS 150mm X 100mm (6" X 4") ELASTOMERIC GASKETED BELL REDUCER (SPL WW-227-B). A BUSHING WILL NOT BE ALLOWED. AS AN ALTERNATE, CUSTOMER MAY INSTALL MINIMUM 450MM (18") LENGTH OF 150mm (6") PIPE, INSTALL 100 mm (4") WASTEWATER LINES, EXTEND 100mm (4") PIPE 150mm (6") MINIMUM INTO 150mm (6") PIPE AND JOINT WITH FLEXIBLE ADAPTER (SPL WW-354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE FLEXIBLE ADAPTER. BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM. CUSTOMER ALSO INSTALLS WATER LINES INCLUDING FITTINGS AND VALVES ON BOTH SIDES OF METER, INSTALL METER BOXES AND COVERS. ALL IN ACCORDANCE WITH INFORMATION ON APPLICABLE STANDARD DRAWING. A VENTED SPACER MAY BE USED TO ASSURE PROPER SPACING AND ALIGNMENT OF METER FITTINGS.
3. IF EXISTING WASTEWATER SERVICE IS 100mm (4"), CUSTOMER SHALL INSTALL A 100mm (4") ELASTOMERIC GASKETED WYE AND VERTICAL 45 DEGREE BEND IN PLACE OF THE 2-WAY CLEANOUT.
4. IF EXISTING SERVICE IS NOT PVC, THE CUSTOMER SHALL INSTALL A FLEXIBLE ADAPTER (SPL WW-354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE ADAPTER TO TRANSITION TO PVC. THE SUPPORT BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER.
5. CUSTOMER IS RESPONSIBLE FOR METER BOX AND PIPING SYSTEM UNTIL METER IS INSTALLED AND WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO CITY SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL VALVES AND STOPS, METER BOX AND 2-WAY-CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
6. CITY OF AUSTIN ACTIVITY IS LIMITED TO INSTALLATION OF THE WATER METER AND INSPECTION OF CONNECTIONS TO THE CITY'S WATER AND WASTEWATER SYSTEMS. FOR MAINTENANCE PURPOSES, THE CITY'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WATER CUT-OFF VALVE AND AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY-CLEANOUT.
7. PIPING AND TUBING IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION SECTION 510.3 (14). MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B); BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESES AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 1.07m (42"). ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.
8. NO METER BOX OR CLEAN OUT SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM AUSTIN WATER UTILITY.

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S–3 1 OF 2

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S–3 2 OF 2



METER BOX DIMENSION			
	Inside Dia.	Outside Dia.	Ht.
Top Dia.	450 mm (18")	600 mm (24")	363 mm (14 5/8")
Bot. Dia.	550 mm (22")	650 mm (26")	

METER SIZE	LENGTH
16 mm (5/8")	194 mm (7 5/8")
19 mm (3/4")	225 mm (9")
25 mm (1")	275 mm (11")

MATERIAL LIST

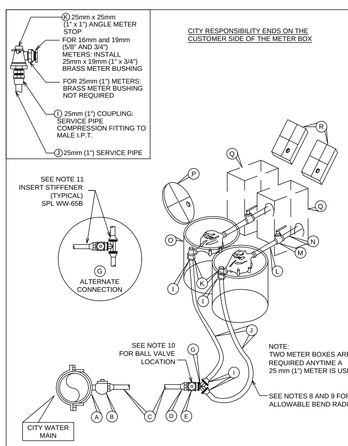
A. SERVICE CLAMP REQUIRED ON ALL PLASTIC AND ASBESTOS CEMENT PIPE AND ON ALL IRON PIPE 300 mm (12") AND SMALLER
B. 38 mm (1 1/2) CORPORATION STOP–SERVICE PIPE OUTLET. SPL #WW68
C. 38 mm (1 1/2) SERVICE PIPE
D. 38 mm (1 1/2) COUPLING: SERVICE PIPE TO MALE I.P.T. (COMPRESSION FITTING)
E. 38 mm (1 1/2) BALL VALVE. SEE SPL WW 275.
F. BRONZE BUSHING, 38 mm X 25 mm (1 1/2" X 1") I.P. THREADS
G. 25 MM (1") COUPLING: SERVICE PIPE TO MALE I.P.T. (COMPRESSION FITTING)
H. 25 mm (1") SERVICE PIPE
I. ANGLE METER STOP: SERVICE PIPE INLET X SWIVEL COUPLING NUT OUTLET AND BRASS BUSHING:
–FOR 16 mm AND 19 mm (5/8" AND 3/4") METERS: 25 mm X 19 mm (1" X 3/4")
–FOR 25 mm (1") METERS: 25 mm X 25 mm (1" X 1") AND 25 mm X 19 MM (1" X3/4") BRASS BUSHING.
A 25 mm X 19 mm (1" X 3/4") METER BUSHING IS REQUIRED AT THE ANGLE STOP TO BE INSTALLED BY PLUMBER FOR ALL 16 mm (5/8") AND 19 mm (3/4") METERS. SPL WW-68.
J. WATER METER COUPLING: MALE I.P.T. X SWIVEL COUPLING NUT:
–FOR 16 mm AND 19 mm (5/8" AND 3/4") METERS: 19 mm X 213 mm (3/4" X 8 3/4") LONG
–FOR 25 mm (1") METERS: 25 mm X 213 mm (1" X 8 3/4") LONG
K. BALL VALVE. SEE SPL WW 276. 19 mm OR 25 mm (3/4" OR 1 ") (PROPERTY OWNER'S CUT-OFF VALVE)
L. 19 mm OR 25 mm (3/4" OR 1") PIPE MEETING CITY OF AUSTIN PLUMBING CODE REQUIREMENTS
M. METER BOX PER STANDARD PRODUCTS LIST– SPL WW-145 OR WW-145A.
N. METAL LID–FOR METER BOX, AUSTIN PIPE AND SUPPLY CO. OR APPROVED EQUAL; OR LID FURNISHED WITH APPROVED BOX. FOR VALVE BOX, TYLER PIPE, WESTERN IRON WORKS OR APPROVED EQUAL.
O. PROPERTY OWNER'S CUT–OFF VALVE BOX–RETANGULAR PLASTIC BOX, DFW #D1200 OR EQUAL.
P. RECTANGULAR PLASTIC BOX LID, DFW #D1200, 300 mm X 425 mm X 300 mm (12" X 17" X 12") OR EQUAL.
Q. ANGLE METER STOP: SERVICE PIPE INLET X SWIVEL COUPLING NUT OUTLET:
–FOR 16 mm AND 19 mm (5/8" AND 3/4") METERS: 25 mm X 19 mm (1" X 3/4")
–FOR 25 mm (1") METERS: 25 mm X 25 mm (1" X 1")

NOTES:

1. SERVICE PIPE SHALL BE COPPER TUBE SIZE. IT SHALL BE ANNEALED SEAMLESS TYPE "K" COPPER TUBING MEETING THE CURRENT ASTM B88 STANDARD WITH NO SWEAT OR SOLDERED JOINTS.
2. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 0.2 mm (8 MIL) POLYETHYLENE FILM.
3. TOP OF BOXES SHOULD BE 25 mm (1") ABOVE GROUND OR FLUSH WITH PAVEMENT SURFACE.
4. PIPING AND TUBING IN STREET RIGHT–OF–WAY SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY SECTION 510.3 (14) OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS: BACKFILL ABOVE GRANULAR BEDDING AS REQUIRED BY SECTION 510.3 (25).
5. BOX MUST BE BEHIND CURB NEXT TO PROPERTY LINE AND/OR SIDEWALK AND OUT OF VEHICULAR TRAFFIC AREA.
6. IF POLYETHYLENE TUBING IS USED, SEE STANDARD #520–14, P.E. WATER SERVICE CASING DETAIL, COMPRESSION FITTING REQUIRED WITH STEEL PIPE STIFFNER INSERT.

CITY OF AUSTIN AUSTIN WATER UTILITY		STANDARD INSTALLATION FOR A 16mm, 19mm OR 25mm (5/8",3/4" OR 1") METER	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S–11 1 OF 2

CITY OF AUSTIN AUSTIN WATER UTILITY		STANDARD INSTALLATION FOR A 16mm, 19mm OR 25mm (5/8",3/4" OR 1") METER	STANDARD NO.
RECORD COPY SIGNED BY KATHI L. FLOWERS	3/9/04 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S–11 2 OF 2



MATERIAL LIST

Ⓐ SERVICE CLAMP REQUIRED ON ALL PLASTIC AND ASBESTOS CEMENT PIPE AND ON ALL IRON PIPE 300 mm (12") AND SMALLER
Ⓑ 50mm (2") CORPORATION STOP-MALE THREAD INLET BY COMPRESSION OUTLET, SPL WW-68
Ⓒ 50mm (2") SERVICE TUBING PER SPL WW-65
Ⓓ COUPLING: 50mm (2") COMPRESSION TO 38mm (1-1/2") MALE I.P.T.
Ⓔ 38mm (1-1/2") BALL VALVE; SEE SPL WW-275 AND NOTE 10.
Ⓕ N/A
Ⓖ 38mm (1-1/2") x 25mm (1") BRONZE WYE. SPL WW-68 OR TEE (ALTERNATE CONNECTION)
Ⓗ N/A
Ⓘ 25mm (1") COUPLING: SERVICE TUBING TO MALE I.P.T. (COMPRESSION FITTING) W/STIFFENER PER SPL WW-65B
Ⓙ 25mm (1") SERVICE TUBING
Ⓚ 25mm (1") ANGLE METER STOP; SERVICE TUBING INLET x SWIVEL COUPLING NUT OUTLET, AND 25mm x 19mm (1" x 3/4") BRASS BUSHING. A 25mm x 19mm (1" x 3/4") METER BUSHING IS REQUIRED AT THE ANGLE STOP TO BE INSTALLED BY PLUMBER FOR ALL 16mm (5/8") AND 19mm (3/4") METERS. SPL WW-68
Ⓛ WATER METER COUPLING: MALE I.P.T. x SWIVEL COUPLING NUT:
-For 16mm AND 19mm (5/8" AND 3/4") METERS: 19mm x 213mm (3/4"x8-1/2") LONG
-For 25mm (1") METERS: 25mm x 213mm (1" x 8-1/2") LONG
Ⓜ CUSTOMER BALL VALVE 25mm (1") SEE SPL WW-276.
Ⓝ 25mm (1") TUBING MEETING CITY OF AUSTIN PLUMBING CODE REQUIREMENTS
Ⓞ METER BOX PER SPL WW-145 OR WW-145A
Ⓟ AMRVAM READY LID-FOR METER BOX FURNISHED WITH APPROVED BOX.
Ⓠ RECTANGULAR BOX FOR CUSTOMER'S CUT-OFF VALVE AND PRV (WHEN REQ'D.) 300mm x 425mm x 300mm (12"x17"x12") OR EQUAL. SIZE MAY VARY WITH PRV AND SHOULD BE SIZED FOR OPERATION OF BALL VALVE. SEE SPL WW-145A.
Ⓡ RECTANGULAR PLASTIC BOX LID, 300mm x 425mm x 300mm (12" x 17" x 12") OR EQUAL. SEE SPL WW-145A.

NOTES:

1. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 0.2 mm (8 MIL) POLYETHYLENE FILM.
2. BRANCH CONNECTION AND BOTH ANGLE METER STOPS MUST BE INSTALLED PRIOR TO FIRST METER INSTALLATION EVEN THOUGH SECOND PROPERTY MAY NOT BE READY FOR SERVICE.
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5. BOX MUST BE BEHIND CURB NEXT TO PROPERTY LINE AND/OR SIDEWALK AND OUT OF VEHICULAR TRAFFIC AREA.
6. INSTALL METALLIC WARNING TAPE MIN. 1' ABOVE P.E. TUBING FROM TAP CONNECTION TO METER.
7. TUBING SHALL BE PLACED SO THAT IT IS RELAXED AND "SNAKES" LOOSELY IN THE TRENCH.
8. TUBING, WHEN BENT, SHALL HAVE A RADIUS NO SMALLER THAN THE VALUE SHOWN IN TABLE 1.
9. IF A FITTING WILL BE INSTALLED WITHIN A BENT SECTION OF TUBING, THE TUBING SHALL SHALL HAVE A RADIUS NO SMALLER THAN THE VALUE SHOWN IN TABLE 2.
10. B.V. Ⓔ SHALL NOT BE LOCATED UNDER CURB OR PAVEMENT, AND NOT BE LOCATED MORE THAN 600mm (24") HORIZONTALLY FROM METER BOX OR 900mm (36") BELOW FINAL GRADE.
11. INSERT STIFFENERS FOR P.E. TUBING PER SPL WW-65B TO BE INSTALLED INSIDE TUBING AT ALL COMPRESSION FITTINGS.

TABLE 1 (SEE NOTE 8)	
Nominal Tubing Dia.	Bend Radius of at Least
25mm (1")	0.9m (3')
38mm (1-1/2")	1.2m (4')
50mm (2")	1.5m (5')

TABLE 2 (SEE NOTE 9)	
Nominal Tubing Dia.	Bend Radius of at Least
25mm (1")	3.66m (12')
38mm (1-1/2")	4.86m (16')
50mm (2")	6.06m (20')

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 1 OF 3

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 2 OF 3

CITY OF AUSTIN AUSTIN WATER UTILITY		POTABLE HDPE DOUBLE SERVICE INSTALLATION & TWO 16mm, 19mm, OR 25mm (5/8", 3/4", OR 1") METERS	STANDARD NO.
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	520S-9B 3 OF 3

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL

FEMA MAP PANEL: 48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

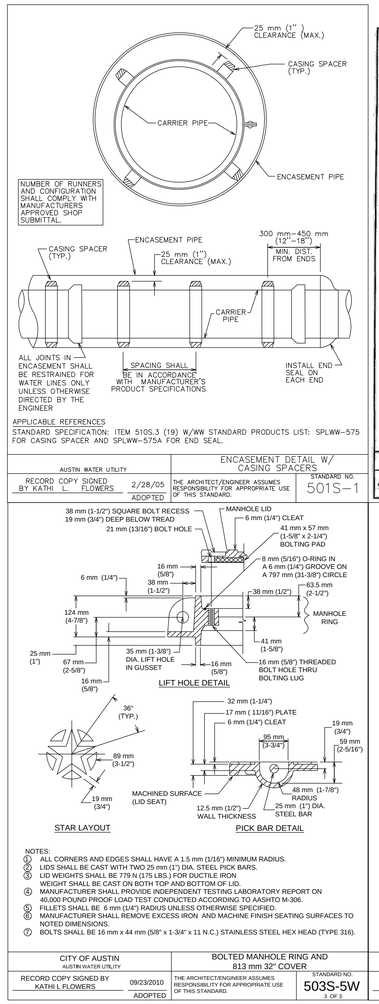
NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescod11

BELTERRA SECTION 21-2

WATER DETAILS 2 OF 2

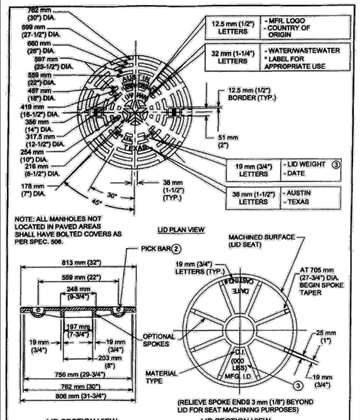
T:\Private\Water\Crescent Belterra\Design\Ph 2 SEC 21\Utils Construction\S-CRESBELTRA-PH2_SEC21-WTD.dwg



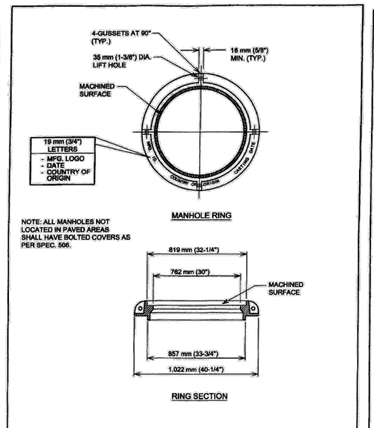
APPLICABLE REFERENCES

STANDARD SPECIFICATION: ITEM 510S.3 (19) W/WW STANDARD PRODUCTS LIST: SPLWW–575 FOR CASING SPACER AND SPLWW–575A FOR END SEAL.

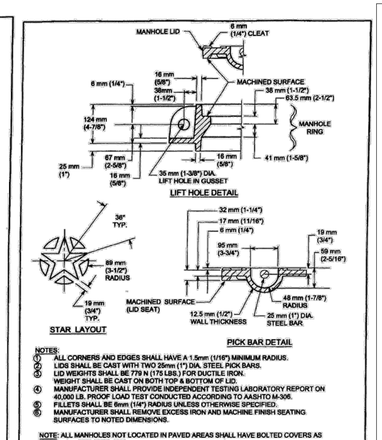
AUSTIN WATER UTILITY		ENCASEMENT DETAIL W/ CASING SPACERS	
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 501S–1



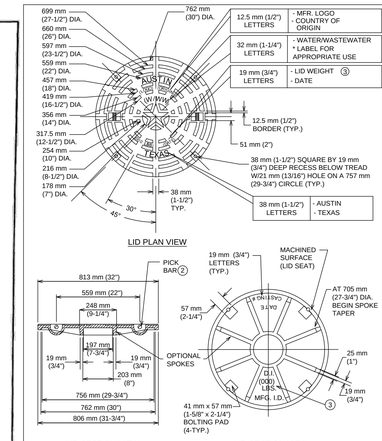
CITY OF AUSTIN AUSTIN WATER UTILITY		MANHOLE RING AND 813 mm (32") COVER	
Kathi L Flowers	9/23/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 1 OF 3



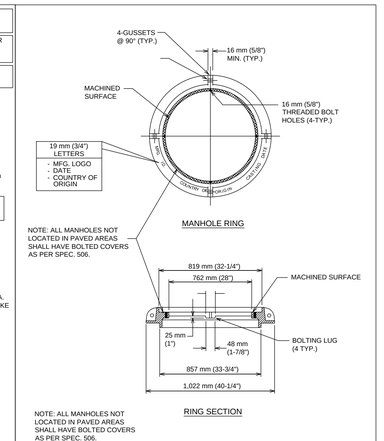
CITY OF AUSTIN AUSTIN WATER UTILITY		MANHOLE RING AND 813 mm (32") COVER	
Kathi L Flowers	9/23/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 2 OF 3



CITY OF AUSTIN AUSTIN WATER UTILITY		MANHOLE RING AND 813 mm (32") COVER	
Kathi L Flowers	9/23/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-4W 3 OF 3

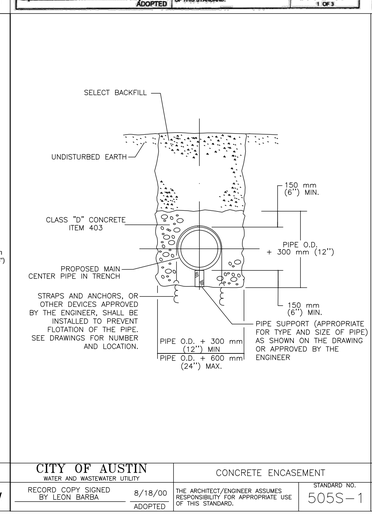


CITY OF AUSTIN AUSTIN WATER UTILITY		BOLTED MANHOLE RING AND 813 mm 32" COVER	
RECORD COPY SIGNED BY KATHI L FLOWERS	09/23/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-5W 1 OF 3

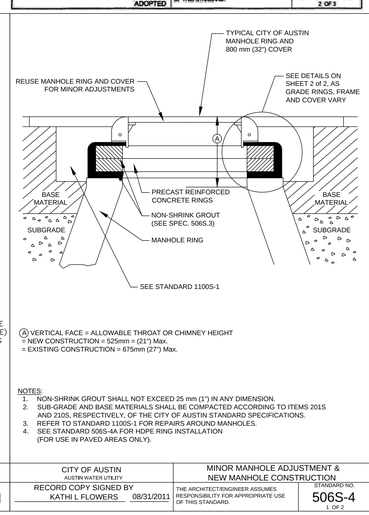


CITY OF AUSTIN AUSTIN WATER UTILITY		BOLTED MANHOLE RING AND 813 mm 32" COVER	
RECORD COPY SIGNED BY KATHI L FLOWERS	09/23/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-5W 2 OF 3

CITY OF AUSTIN AUSTIN WATER UTILITY		BOLTED MANHOLE RING AND 813 mm 32" COVER	
RECORD COPY SIGNED BY KATHI L FLOWERS	09/23/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 503S-5W 3 OF 3

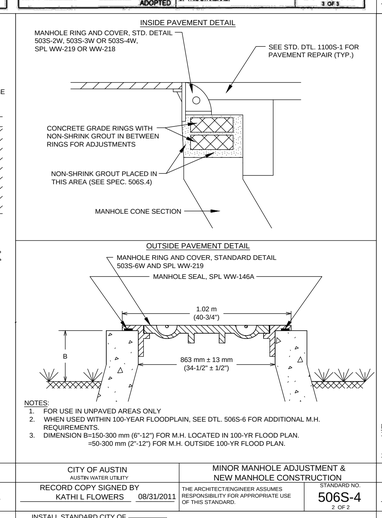


CITY OF AUSTIN WATER AND WASTEWATER UTILITY		CONCRETE ENCASEMENT	
RECORD COPY SIGNED BY LEON BARBA	8/18/00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 505S–1



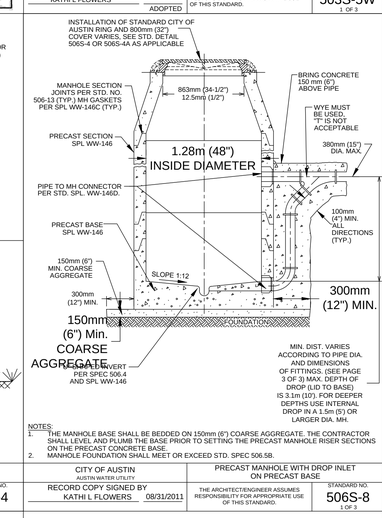
NOTES:
1. NON-SHRINK GROUT SHALL NOT EXCEED 25 mm (1") IN ANY DIMENSION.
2. SUB-GRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO ITEMS 201S AND 210S, RESPECTIVELY, OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
3. REFER TO STANDARD 1100S-1 FOR REPAIRS AROUND MANHOLES.
4. SEE STANDARD 506S-4A FOR HDPE RING INSTALLATION (FOR USE IN PAVED AREAS ONLY).

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 1 OF 2



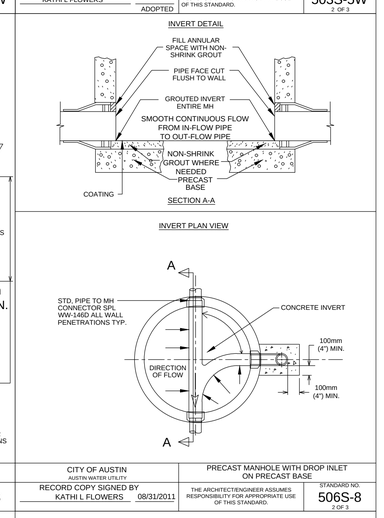
NOTES:
1. FOR USE IN UNPAVED AREAS ONLY.
2. WHEN USED WITHIN 100-YEAR FLOODPLAIN, SEE DTL. 506S-6 FOR ADDITIONAL M.H. REQUIREMENTS.
3. DIMENSION B=150-300 mm (6"-12") FOR M.H. LOCATED IN 100-YR FLOOD PLAN. =50-300 mm (2"-12") FOR M.H. OUTSIDE 100-YR FLOOD PLAN.

CITY OF AUSTIN AUSTIN WATER UTILITY		MINOR MANHOLE ADJUSTMENT & NEW MANHOLE CONSTRUCTION	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-4 2 OF 2

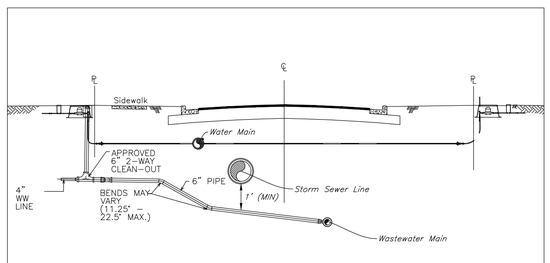


NOTES:
1. THE MANHOLE BASE SHALL BE BEDDED ON 150mm (6") COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MANHOLE FOUNDATION SHALL MEET OR EXCEED STD. SPEC 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY		PRECAST MANHOLE WITH DROP INLET ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-8 1 OF 3



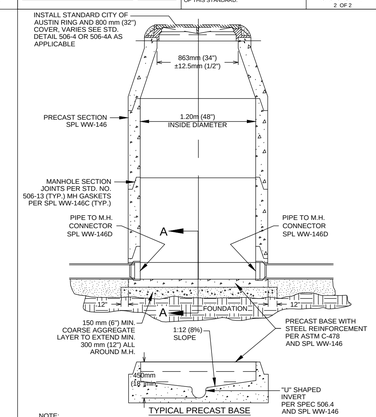
CITY OF AUSTIN AUSTIN WATER UTILITY		PRECAST MANHOLE WITH DROP INLET ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-8 2 OF 3



LOCAL STREET W/ CURB AND GUTTER

ALTERNATE DEEP SERVICE CONNECTION

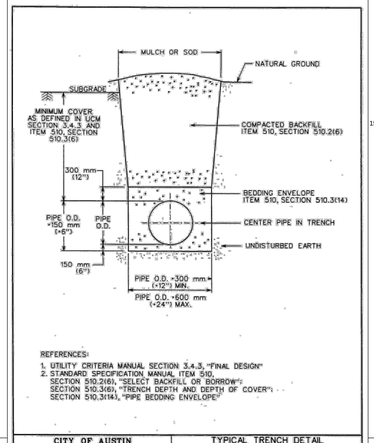
(N.T.S.)



TYPICAL PRECAST BASE

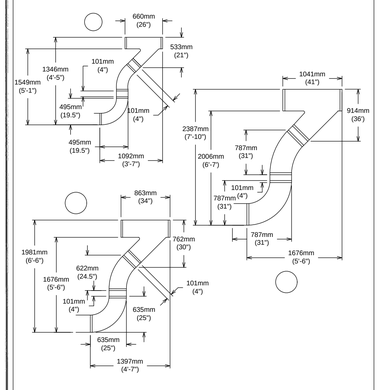
NOTE:
1. THE MANHOLE BASE SHALL BE BEDDED ON 150 mm (6") COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
2. MH FOUNDATION SHALL MEET OR EXCEED STD. SPEC. 506.5B.

CITY OF AUSTIN AUSTIN WATER UTILITY		WASTEWATER MANHOLE ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD	STANDARD NO. 506S-10



REFERENCES:
1. UTILITY CRITERIA MANUAL SECTION 3.4.3, "FINAL DESIGN"
2. STANDARD SPECIFICATION MANUAL ITEM 510, SECTION 510.2(6), "SELECT BACKFILL OR BORROW"; SECTION 510.3(6), "TRENCH DEPTH AND DEPTH OF COVER"; SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPICAL TRENCH DETAIL WITH UNFINISHED SURFACE	
Eric Bardwell	3/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 510S–5



CITY OF AUSTIN AUSTIN WATER UTILITY		PRECAST MANHOLE WITH DROP INLET ON PRECAST BASE	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-8 3 OF 3

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED PROFESSIONAL ENGINEER
8/22/17

Texas Engineering Solutions

3815 S. Capital of Texas Hwy, Suite 300
Austin, Texas 78704
O: 512-904-0505
F: 512-904-0509
TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

LH BELTERRA, LLC
400 E. LAS COLINAS BLVD., SUITE 1075
IRVING, TEXAS 75039
469–513–5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

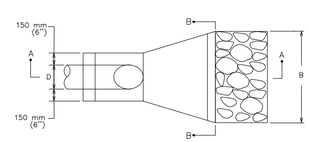
NO	DATE - DESCRIPTION

EDITED: August 6, 2015
PLOTTED: August 22, 2017
PLOTTED BY: tescad11

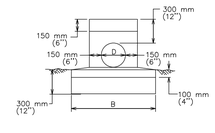
BELTERRA SECTION 21-2

WASTEWATER DETAILS 1 OF 2

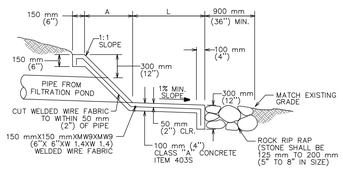
T:\Private\Water\Crescent Belterra\Design\PH 2 SEC 21\Shts Construction\S-CRESBELTRA_PH2_SEC21-WWD4.dwg



PLAN



SECTION B – B



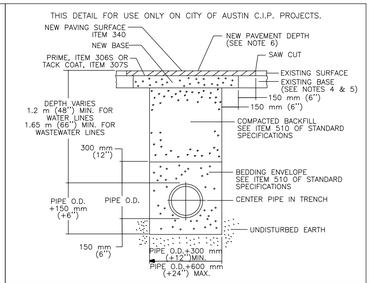
SECTION A – A

	150 mm (6")	200 mm (8")	250 mm (10")	300 mm (12")	375 mm (15")
A	450 mm (18")	500 mm (20")	550 mm (22")	600 mm (24")	675 mm (27")
B	750 mm (30")	800 mm (32")	850 mm (34")	1.05 m (42")	1.27 m (51")
D	150 mm (6")	200 mm (8")	250 mm (10")	300 mm (12")	375 mm (15")
L	600 mm (24")	600 mm (24")	750 mm (30")	900 mm (36")	1.2 m (48")

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		HEADWALL FOR FILTRATION PONDS W/OUTFALL PIPE 150 mm (6") TO 375 mm (15") DIA.	
RECORD COPY SIGNED BY GEORGE E. OSWALD	3/15/05	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–15
ADOPTED			1 OF 2

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW		HEADWALL FOR FILTRATION PONDS W/OUTFALL PIPE 150 mm (6") TO 375 mm (15") DIA.	
RECORD COPY SIGNED BY GEORGE E. OSWALD	3/15/05	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S–15
ADOPTED			2 OF 2

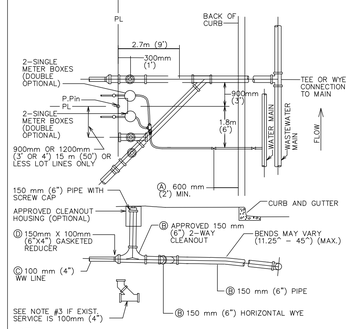
THIS DETAIL FOR USE ONLY ON CITY OF AUSTIN C.I.P. PROJECTS.



NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE A MINIMUM OF 300 mm (12") WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
2. ANY CONCRETE PAVING SHALL BE SAW CUT 150 mm (6") WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX ASPHALTIC CONCRETE.
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND OF EQUAL THICKNESS, OR MINIMUM BASE THICKNESS OF 250 mm (10"), WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 200 mm (8") OF BASE OR MATCH EXISTING THICKNESS, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 50 mm (2"), WHICHEVER IS GREATER.

CITY OF AUSTIN WATER AND WASTEWATER UTILITY		TYPICAL TRENCH WITH PAVED SURFACE	
RECORD COPY SIGNED BY KATHI L. FLOWERS	8/19/02	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 510S–3
ADOPTED			



NOTES:

Ⓐ THESE DIMENSIONS MAY BE INCREASED BY WIDTH OF WALK IF WALK IS LOCATED AT CURB.

Ⓑ TO BE INSTALLED AND INSPECTED DURING SUBDIVISION CONSTRUCTION.

Ⓒ BUILDING INSPECTION DEPARTMENT SHALL INSPECT CUSTOMER'S WASTEWATER LINE, EXCEPT CONNECTION AT WYE, AND WATER LINE TO CUSTOMER'S SHUT–OFF–VALVE.

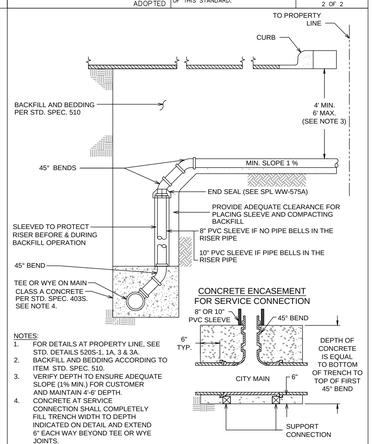
Ⓓ TAPS INSPECTION OFFICE INSPECTS CONNECTIONS OF CUSTOMER'S WATER AND WASTEWATER LINES TO CITY SYSTEMS.

NOTES:

1. DURING SUBDIVISION CONSTRUCTION UTILITY CONTRACTOR INSTALLS WASTEWATER CONNECTION TO MAIN, 150mm (6") STUB WITH HORIZONTAL WYE FOR DOUBLE SERVICES, 150mm (6") SERVICE BRANCH WITH 2–WAY–CLEANOUT(S) AND RISER FOR CLEANOUT(S) (CAPPED), AND PLUG(S) FOR 2–WAY–CLEANOUT(S) AT PROPERTY LINE END. ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN 1% (.264mm (1/8") PER FOOT) MINIMUM TO 45° MAXIMUM. DEPTH OF SERVICE STUB AT PROPERTY LINE WILL BE SHOWN ON PLANS BY ENGINEER IF GREATER THAN 1.22m (4'). OTHERWISE THE INSTALLED DEPTH WILL TYPICALLY BE 1.22m (4") TO 1.8m (6'). IF WASTEWATER SERVICE LINE TO MAIN REQUIRES DEFLECTION EXCEEDING 45°, REFER TO DETAIL 520–6. UTILITY CONTRACTOR ALSO INSTALLS WATER CONNECTION TO MAIN WATER PIPE, FITTINGS AND VALVES INCLUDING STOP VALVE–REFER TO DETAIL 520S–7 AND 9 FOR LOCATION OF STOP VALVES. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH INFORMATION SHOWN ON APPLICABLE STANDARD DRAWINGS AND WILL BE INSPECTED BY CITY OF AUSTIN CONSTRUCTION INSPECTION PERSONNEL.
2. CUSTOMER REMOVES PLUG FROM 2–WAY–CLEANOUT AT PROPERTY LINE, INSTALLS 150mm X 100mm (6" X 4") ELASTOMERIC GASKETED BELL REDUCER (SPL WW–227–B). A BUSHING WILL NOT BE ALLOWED. AS AN ALTERNATE, CUSTOMER MAY INSTALL MINIMUM 450MM (18") LENGTH OF 150mm (6") PIPE, INSTALL 100 mm (4") WASTEWATER LINES, EXTEND 100mm (4") PIPE 150mm (6") MINIMUM INTO 150mm (6") PIPE AND JOINT WITH FLEXIBLE ADAPTER (SPL WW–354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE FLEXIBLE ADAPTER. BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY TO SEWER MAIN ADJACENT TO PROPERTY, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM. CUSTOMER ALSO INSTALLS WATER LINES INCLUDING FITTINGS AND VALVES ON BOTH SIDES OF METER. INSTALL METER BOXES AND COVERS. ALL IN ACCORDANCE WITH INFORMATION ON APPLICABLE STANDARD DRAWING. A VENTED SPACER MAY BE USED TO ASSURE PROPER SPACING AND ALIGNMENT OF METER FITTINGS.
3. IF EXISTING WASTEWATER SERVICE IS 100mm (4"), CUSTOMER SHALL INSTALL A 100mm (4") ELASTOMERIC GASKETED WYE AND VERTICAL 45 DEGREE BEND IN PLACE OF THE 2–WAY CLEANOUT.
4. IF EXISTING SERVICE IS NOT PVC, THE CUSTOMER SHALL INSTALL A FLEXIBLE ADAPTER (SPL WW–354) AND CAST IN PLACE CONCRETE SUPPORT BLOCK UNDER THE ADAPTER TO TRANSITION TO PVC. THE SUPPORT BLOCK SHALL HAVE MINIMUM DIMENSIONS OF 150mm (6") THICK AND 450mm (18") WIDE AND EXTEND A MINIMUM OF 150mm (6") BEYOND EITHER END OF THE ADAPTER.
5. CUSTOMER IS RESPONSIBLE FOR METER BOX AND PIPING SYSTEM UNTIL METER IS INSTALLED AND WASTEWATER IS CONNECTED. ANY MISSING OR DAMAGED PARTS SHALL BE REINSTALLED BY CUSTOMER WHO SHALL GUARANTEE, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE, THAT CONNECTIONS TO CITY SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL. CUSTOMER ALSO HAS THE RESPONSIBILITY TO ASSURE THAT ALL VALVES AND STOPS, METER BOX AND 2–WAY–CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.
6. CITY OF AUSTIN ACTIVITY IS LIMITED TO INSTALLATION OF THE WATER METER AND INSPECTION OF CONNECTIONS TO THE CITY'S WATER AND WASTEWATER SYSTEMS. FOR MAINTENANCE PURPOSES, THE CITY'S RESPONSIBILITY ENDS AT THE CUSTOMER'S WATER CUT–OFF VALVE AND AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2–WAY–CLEANOUT.
7. PIPING AND TUBING IN STREET RIGHT–OF–WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION SECTION 510.3 (14). MATERIALS SHALL BE AS SPECIFIED IN 510.2 (2)(A) AND (3)(B). BACKFILL ABOVE THE GRANULAR BEDDING SHALL BE AS REQUIRED BY SECTION 510.3 (25). SERVICE LINES IN THESES AREAS SHALL HAVE A MINIMUM COVER BELOW FINAL STREET GRADE OF 1.07m (42"). ANY EXCEPTION MUST BE SPECIFICALLY APPROVED BY THE ENGINEER.
8. NO METER BOX OR CLEAN OUT SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM AUSTIN WATER UTILITY.

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520S–3
ADOPTED			1 OF 2

CITY OF AUSTIN AUSTIN WATER UTILITY		DOUBLE WATER/WASTEWATER SERVICE CONNECTION DETAIL	
RECORD COPY SIGNED BY KATHI L. FLOWERS	2/28/05	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520S–3
ADOPTED			2 OF 2



NOTES:

1. FOR DETAILS AT PROPERTY LINE, SEE STD. DETAILS 520S–1, 1A, 3 & 3A.
2. BACKFILL AND BEDDING ACCORDING TO ITEM STD. SPEC. 510.
3. VERIFY DEPTH TO ENSURE ADEQUATE SLOPE (1% MIN.) FOR CUSTOMER AND MAINTAIN 4'-6' DEPTH.
4. CONCRETE AT SERVICE CONNECTION SHALL COMPLETELY FILL TRENCH WIDTH TO DEPTH INDICATED ON DETAIL AND EXTEND 6" EACH WAY BEYOND TEE OR WYE JOINTS.

CITY OF AUSTIN AUSTIN WATER UTILITY		WASTEWATER DEEP SERVICE CONNECTION DETAIL	
RECORD COPY SIGNED BY KATHI L FLOWERS	08/31/2011	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 520-6

STATE OF TEXAS
STEPHEN R. DELGADO
99342
LICENSED
PROFESSIONAL ENGINEER
8/22/17

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PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

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AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

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BELTERRA SECTION 21-2

WASTEWATER DETAILS 2 OF 2

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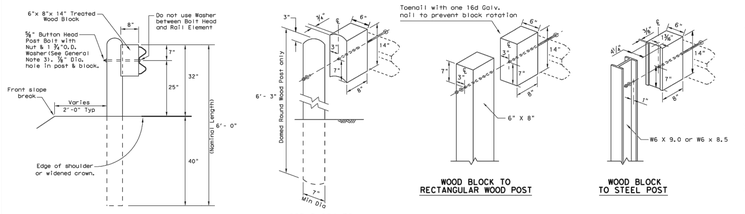
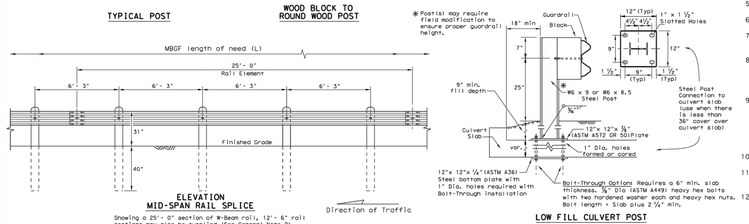


TYPICAL POST

WOOD BLOCK TO ROUND WOOD POST

WOOD BLOCK TO RECTANGULAR WOOD POST

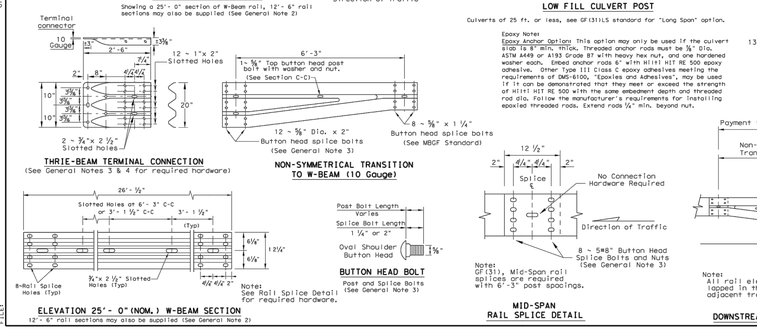
WOOD BLOCK TO STEEL POST



ELEVATION
MID-SPAN RAIL SPLICE
Showing a 25'- 0" section of W-Beam rail, 12'- 6" rail sections may also be supplied (See General Note 2)

LOW FILL CULVERT POST
Culverts of 25 ft. or less, see GF(31)LS standard for "Long Span" option.

Epoxy Notes
Epoxy Anchor Options This option may only be used if the culvert slab is 8" min. thick. Threaded anchor rods must be 3/4" Dia. ASTM A449 or A193 Grade B7 with heavy hex nut, and one hardened washer each. Embed anchor rods 6" with Hilti HIT RE 500 epoxy adhesive. Other Type III Class C epoxy adhesives meeting the requirements of DMS-6100, "Epoxies and Adhesives", may be used if it can be demonstrated that they meet or exceed the strength of Hilti HIT RE 500 with the same embedment depth and threaded rod dia. Follow the manufacturer's requirements for installing epoxied threaded rods. Extend rods 1/4" min. beyond nut.



THRIE-BEAM TERMINAL CONNECTION
(See General Notes 3 & 4 for required hardware)

NON-SYMMETRICAL TRANSITION TO W-BEAM (10 Gauge)

ELEVATION 25'- 0"(NOM.) W-BEAM SECTION
12'- 6" rail sections may also be supplied (See General Note 2)

Notes:
See Rail Splice Detail for required hardware.

BUTTON HEAD BOLT
Post and Splice Bolts (See General Note 3)

MID-SPAN RAIL SPLICE DETAIL

Notes:
GF(31), Mid-Span rail splices are required with 6'-3" post spacings.

DOWNSTREAM RAIL ATTACHMENT

Notes:
All rail elements shall be lapped in the direction of adjacent traffic.

GENERAL NOTES

1. The type of post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of MBGF shall be shown in the plans or as directed by the Engineer. Steel posts to be galvanized in accordance with Item 445, "Galvanizing."
2. Rail element shall meet the requirements of Item 540,"Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'- 0", or 12'- 6" (nom.) lengths. Rail elements may have slotted holes at 3'-1 1/2" C-C or 6'-3" C-C. A special length of rail may be manufactured to accommodate the downstream anchor terminal (DAT) and the transition sections of guardrail.
3. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 3/4" O.D.)washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are 5/8" x 1 1/4" (or 2" long at triple rail splices) with a 5/8" double recessed nut (ASTM A563). Thrie beam "connection" 7/8" dia. (ASTM A325) hex bolts shall be of sufficient length to extend through the full thickness of the rail, washers, and nuts.
4. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
5. Crown shall be widened to accommodate the Metal Beam Guard Fence.
6. The lateral approach to the guard fence, shall have a maximum slope of 1V:10H.
7. If shown elsewhere in the plans or as directed by the Engineer, the guard fence may be flared at a rate of 25:1 or flatter.
8. Unless otherwise shown in the plans, guard fence placed in the vicinity of curbs shall be positioned so that the face of curb is located directly below or behind the face of the rail. Rail placed over curbs shall be installed so that the post bolt is located approximately 25 inches above the gutter pan or edge of shoulder.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, or drill two 12" dia. front to back overlapping holes, 24" into the rock. If solid rock is encountered below 18",drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever maybe less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
10. Posts shall not be set in concrete, of any depth.
11. Special fabrication will be required at installations having a curvature of less than 150 ft. radius.
12. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL may furnish composite material posts and/or blocks.
13. For posts located partially or wholly between precast box culvert units, the use of a cast-in-place concrete closure between boxes is required. See Detail "A" on Bridge Standard SCP-MD.

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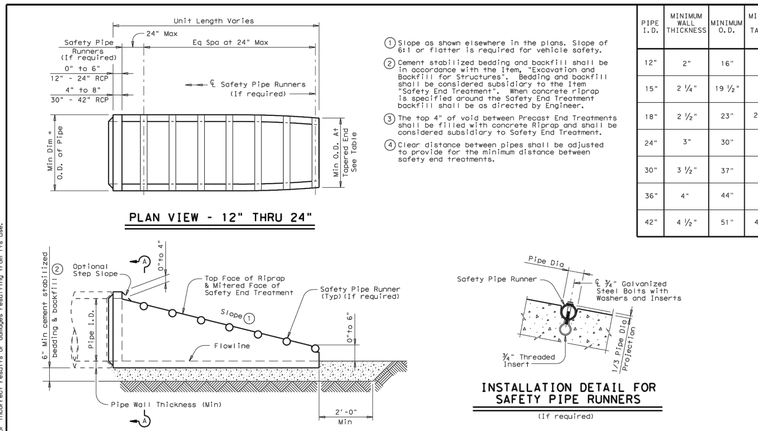
Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE

GF(31)-14

FILE: gf3114.dgn	DN: TxDOT	CK: AM	DW: VP	CK: CSL	
©TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST		COUNTY		SHEET NO.



PLAN VIEW - 12" THRU 24"

LONGITUDINAL ELEVATION - 12" THRU 24"

INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS
(If required)

OPTION A

OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS
(If required)

SECTION A-A

MULTIPLE PIPE INSTALLATION

1. Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
2. Cement stabilized bedding and backfill shall be in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill shall be considered subsidiary to the Item "Safety End Treatment". When concrete riprap is specified around the Safety End Treatment backfill shall be as directed by Engineer.
3. The top 4" of void between Precast End Treatments shall be filled with concrete Riprap and shall be considered subsidiary to Safety End Treatment.
4. Clear distance between pipes shall be adjusted to provide for the minimum distance between safety end treatments.

PIPE I.D.	MINIMUM WALL THICKNESS	MINIMUM O.D.	MIN O.D. AT TAPERED END	MIN REINF REQUIREMENTS (Sq in/ft of pipe)	MAXIMUM SLOPE	MINIMUM LENGTH OF UNIT	PIPE RUNNERS REQUIRED		REQUIRED PIPE RUNNER SIZES		
							SINGLE PIPE	MULTIPLE PIPE	NOMINAL DIA.	O.D.	I.D.
12"	2"	16"	16"	0.07 CIRC.	6:1	4'-0"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
15"	2 1/4"	19 1/2"	19"	0.07 CIRC.	6:1	5'-8"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
18"	2 1/2"	23"	21 1/2"	0.07 CIRC.	6:1	7'-3"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 CIRC.	6:1	10'-6"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
30"	3 1/2"	37"	31"	0.18 CIRC.	6:1	12'-1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 ELIP.	6:1	15'-4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	51"	41 1/2"	0.23 ELIP.	6:1	18'-7"	Yes	Yes	4" STD	4.500"	4.026"

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When Precast Safety End Treatment is used as a Contractor's alternate to mitered RCP, Riprap will not be required unless noted otherwise on the plans.

All precast concrete end sections shall be manufactured in accordance with Item "Reinforced Concrete Pipe Culverts" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Precast concrete end sections shall be provided with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe Runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Pipe Runners shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

All steel components except reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

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Texas Department of Transportation
Bridge Division

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-RP

FILE: psetrpae.dgn	DN: RLB	CK: KLR	DW: JTR	CK: GAF			
©TxDOT: May 2005	DISTRICT		FEDERAL AID PROJECT			SHEET	
REVISIONS							
	COUNTY			CONTROL	SECT	JOB	HIGHWAY

STATE OF TEXAS — STEPHEN R. DELGADO — 99342 — LICENSED PROFESSIONAL ENGINEER — 8/22/17

Texas Engineering Solutions

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Austin, Texas 78704
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TBPE No. 11206

PROJECT DATA

COUNTY:	HAYS
CITY LIMITS/ETJ:	DRIPPING SPRINGS
FINAL PLAT NUMBER:	XXXXX
RELATED CASES:	
PROJECT ADDRESS:	MESA VERDE DRIVE
GRID NUMBER:	N.A.
ZONING:	RESIDENTIAL
FEMA MAP PANEL:	48209C0140F

OWNER / DEVELOPER

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IRVING, TEXAS 75039
469-513-5601

CONSULTANTS:

AUSTIN SPATIAL TECHNOLOGIES

REVISIONS

NO	DATE - DESCRIPTION

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PLOTTED: August 22, 2017
PLOTTED BY: tescad11

BELTERRA SECTION 21-2

TxDOT DETAILS

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STRUCTURAL GENERAL NOTES AND SPECIFICATIONS

STRUCTURAL GENERAL NOTES AND SPECIFICATIONS

1 APPLICABLE CODES AND STANDARDS - ALL CODES AND STANDARDS REFERENCED SHALL BE THE LATEST EDITION.

2 ANY REQUIRED CHANGES TO THE STRUCTURAL DRAWINGS DUE TO THE ACCEPTANCE OR INCLUSION OF ALTERNATES OR SUBSTITUTIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

3 THE CONTRACTOR SHALL COMPARE THE STRUCTURAL DRAWINGS WITH THE CIVIL DRAWINGS AND REPORT ANY DISCREPANCY TO THE ENGINEER PRIOR TO FABRICATION OR INSTALLATION OF STRUCTURAL MEMBERS.

4 JOB SITE SAFETY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL, AS A MINIMUM, ADHERE TO OCCUPATIONAL SAFETY AND HEALTH (OSHA) REGULATIONS TO PROTECT PERSONNEL.

FOUNDATION NOTES

1 DESIGN LOADS

LATERAL WATER PRESSURE - WALLS ARE DESIGNED FOR WATER TO TOP OF WALL AT UPSTREAM SIDE.

HYDROSTATIC PRESSURE - WALLS ARE DESIGNED WITH WATER TABLE UP TO TWO-THIRD OF THE WALL HEIGHT AT HEEL SIDE.

ACTIVE LATERAL EARTH PRESSURE - EQUIVALENT FLUID PRESSURE OF 65 PCF

SURCHARGE PRESSURE - 50 PSF ON HEEL SIDE OF WALL

2 DESIGN ALLOWABLE SOIL BEARING PRESSURE IS 2500 PSF ON PROOF-ROLLED NATURAL SUBGRADE.

3 THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS PREPARED BY MLA LABS, INC., 2800 LONGHORN BOULEVARD, SUITE 104, AUSTIN, TEXAS 78758, TEL. (512) 873-8899, ENGINEER'S JOB #16101100.016, REPORT DATED AUGUST 2016. THE CONTRACTOR SHALL OBTAIN A COPY OF THIS REPORT AND REVIEW ITS CONTENTS TO BECOME FAMILIAR WITH THE GEOTECHNICAL CONDITIONS THAT EXIST AT THIS SITE AND THE RECOMMENDATIONS PRESENTED IN THE GEOTECHNICAL INVESTIGATION.

4 PRIOR TO COMMENCEMENT OF EXCAVATION OPERATIONS, FIELD LOCATE AND ADEQUATELY PROTECT ANY EXISTING STRUCTURES, TREES, UTILITIES AND/OR OTHER PERMANENT ELEMENTS TO REMAIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY DAMAGE RESULTING FROM CONSTRUCTION OPERATIONS.

5 THE CONTRACTOR SHALL PROVIDE AND ENSURE PROPER DRAINAGE OF THE SITE PRIOR TO BEGINNING CONSTRUCTION OF THE RETAINING WALLS AND SPLITTER BOX. DRAINAGE SHALL BE SUCH THAT SURFACE RUNOFF IS ROUTED AROUND OR AWAY FROM THE POND. MEASURES SHALL BE TAKEN TO PREVENT THE PONDING OF WATER WITHIN THE FOUNDATION AREA.

6 THE CONSTRUCTION AREA FOR THE RETAINING WALLS AND SPLITTER BOX SHALL BE STRIPPED OF ALL VEGETATION, LOOSE TOP SOIL, DEBRIS, ORGANICS AND OTHER DELETERIOUS MATERIAL. ROOTS AND STUMPS OF TREES WITHIN THE CONSTRUCTION AREA SHALL BE REMOVED FOR THEIR FULL DEPTH, INCLUDING THE DRY SOILS AROUND THE ROOT BULB. EXCAVATIONS IN CUT AREAS SHALL BE BENCHED.

7 FOOTINGS SHALL BE FOUNDED ON UNDISTURBED NATURAL SUBGRADE. EXCAVATIONS SHALL BE NEAT AND FREE OF ALL LOOSE MATERIALS AND DEBRIS PRIOR TO PLACEMENT OF CONCRETE. CONTRACTOR SHALL USE CARE TO PROTECT EXCAVATIONS FROM CAVING AND SLOUGHING DUE TO TRAFFIC FROM EQUIPMENT OR WORKMEN.

8 ONCE FINAL SUBGRADE ELEVATIONS HAVE BEEN ACHIEVED, THE EXPOSED SUBGRADE SHALL BE CAREFULLY PROOFROLLED WITH A 15-TON PNEUMATIC ROLLER OR EQUIVALENT EQUIPMENT TO DETECT WEAK ZONES IN THE SUBGRADE. WEAK AREAS DETECTED DURING PROOFROLLING SHALL BE REMOVED AND REPLACED WITH SOILS EXHIBITING SIMILAR CLASSIFICATION, MOISTURE CONTENT AND DENSITY AS THE ADJACENT IN-SITU SOILS. EXPOSED LIMESTONE SUBGRADE AREAS SHALL BE CLEANED SUFFICIENTLY AND ANY VOIDS FILLED WITH CRUSHED LIMESTONE BASE MATERIAL. PRIOR TO FOOTING CONSTRUCTION, THE SUBGRADE PREPARATION SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

9 IN THE EVENT THAT EXCAVATIONS ARE COMPLETED TO A DEPTH GREATER THAN THAT REQUIRED BY THE DRAWINGS, THE CONTRACTOR SHALL FILL THE OVEREXCAVATION WITH CONCRETE. CONCRETE REQUIRED TO COMPENSATE THE OVEREXCAVATION SHALL BE AT THE CONTRACTOR'S EXPENSE.

10 ANY WATER ACCUMULATIONS IN EXCESS OF 1 INCH SHALL BE PUMPED OUT PRIOR TO PLACEMENT OF CONCRETE. REBAR AND CONCRETE FOR FOOTINGS SHALL BE PLACED AS SOON AS PRACTICAL FOLLOWING COMPLETION OF EXCAVATIONS TO PREVENT EXCESSIVE DRYING OR WETTING OF THE SUBGRADE.

11 ALL BACKFILL BEHIND THE RETAINING WALLS AND THE SPLITTER BOX SHALL CONSIST OF EMBANKMENT MATERIAL SPECIFIED BY THE PROJECT CIVIL ENGINEER AND/OR GEOTECHINICAL ENGINEER.

12 BACKFILLING OPERATIONS SHALL NOT BEGIN UNTIL CONCRETE WALLS HAVE CURED A MINIMUM OF 7 DAYS. FORMS SHALL REMAIN IN PLACE FOR A MINIMUM OF 7 DAYS. IF DESIRED, FORMS MAY BE REMOVED UPON SATISFACTORY EVIDENCE THAT CONCRETE HAS ACHIEVED 75% OF ITS SPECIFIED 28 DAY STRENGTH AND PROVIDED THAT CONCRETE IS CURED USING WET COTTON MATS FOR THE REMAINDER OF THE 7 DAY CURING PERIOD. UNDER NO CIRCUMSTANCES SHALL BACKFILLING COMMENCE IN LESS THAN 7 DAYS. THE BACKFILL PLACEMENT AND COMPACTION OPERATIONS SHALL BE CAREFULLY CONTROLLED TO PREVENT OVERCOMPACTION OR DAMAGE TO THE STRUCTURES.

REINFORCED CONCRETE NOTES

1 ALL CONCRETE SHALL BE CLASS C (3600 PSI) NORMAL WEIGHT CONCRETE WITH A WATER/CEMENT RATIO OF NOT MORE THAN 0.45 AND A SLUMP IN THE RANGE OF 6 TO 8 INCHES. WATER CONTENT SHALL BE CLOSELY MONITORED DURING BATCHING. UNDER NO CIRCUMSTANCES SHALL THE WATER/CEMENT RATIO BE PERMITTED TO EXCEED THE SPECIFIED MAXIMUM. THE USE OF A MID RANGE WATER REDUCING ADMIXTURE IS RECOMMENDED TO IMPROVE WORKABILITY DURING PLACING OPERATIONS.

2 THE USE OF FLY ASH IS REQUIRED. ALL CONCRETE SHALL CONTAIN A MINIMUM FLY ASH CONTENT EQUAL TO 25 PERCENT OF THE TOTAL WEIGHT OF THE CEMENT PLUS FLY ASH BY WEIGHT. FLY ASH SHALL BE CLASS F. CLASS C FLY ASH WILL BE PERMITTED ONLY WITH THE APPROVAL OF THE ENGINEER AND PROVIDED THAT THE ALKALI CONTENT OF THE CEMENT IS LESS THAN 0.4 PERCENT. CONTRACTOR SHALL SUBMIT EVIDENCE OF THE ALKALI CONTENT CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.

3 REINFORCING STEEL SHALL BE ASTM/ANSI A615, GRADE 60. DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES," ACI 315.

4 CONCRETE CONSTRUCTION, INCLUDING MINIMUM REINFORCING STEEL COVERAGE BY CONCRETE, SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE," ACI 318, UNLESS OTHERWISE NOTED.

5 PROVIDE SUPPORTS OR CHAIRS TO SUPPORT REBAR AT THE POSITIONS REQUIRED BY THE DRAWINGS. REINFORCEMENT FOR FOOTINGS SHALL BE SUPPORTED ON PRECAST CONCRETE BLOCKS OF A THICKNESS TO PROPERLY POSITION THE REBAR. BLOCKS SHALL BE PROVIDED AT 3'-0" MAXIMUM ON CENTERS.

6 LAP CONTINUOUS UNSCHEDULED REINFORCING BARS 36 BAR DIAMETERS UNLESS OTHERWISE NOTED.

7 THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS EXCEPT WHERE SPECIFICALLY NOTED ON THESE DRAWINGS.

8 UNLESS OTHERWISE NOTED, PROVIDE #4 CORNER BARS WITH 2'-0" LEGS TO MATCH HORIZONTAL REINFORCING AT ALL WALL INTERSECTIONS.

9 THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS ARE DELIVERED TO THE SITE IN A TIMELY FASHION AND INSTALLED IN THE FORMWORK PRIOR TO PLACEMENT OF CONCRETE.

10 FIELD CUTTING OF REINFORCEMENT SHALL BE BY SHEARING OR SAWING. FIELD CUTTING OF REINFORCEMENT BY TORCH WILL BE PERMITTED ONLY WITH THE APPROVAL OF THE ENGINEER.

11 UNLESS OTHERWISE NOTED, ALL 90, 135 AND 180 DEGREE REINFORCING STEEL HOOKS SHALL BE STANDARD ACI HOOKS.

12 THE CONTRACTOR SHALL USE A TREMIE TO PLACE CONCRETE IN ALL AREAS WHERE THE FALL OF THE CONCRETE WILL EXCEED 5 FEET.

13 THE CONTRACTOR SHALL USE CARE TO PROPERLY VIBRATE CONCRETE DURING PLACING OPERATIONS TO ENSURE GOOD DENSITY OF CONCRETE AND TO MINIMIZE SURFACE DEFECTS.

14 CHAMFER ALL EXPOSED EDGES 3/4 INCH.

15 FORMWORK FOR SURFACES TO BE EXPOSED TO VIEW IN THE FINISHED CONSTRUCTION SHALL BE SMOOTH, EITHER WOOD OR METAL. SMOOTH FORMS SHALL BE FREE OF RAISED GRAIN, TORN SURFACES, WORN EDGES, PATCHES, DENTS OR OTHER DEFECTS. STRENGTH OF FORMS SHALL BE SUCH THAT NO WARPING, BULGING OR BOWING OCCUR UNDER THE WEIGHT OF THE WET CONCRETE. JOINTS SHALL BE SMOOTH AND MORTAR TIGHT. FORMS WHICH DO NOT PRESENT A SMOOTH SURFACE OR LINE UP PROPERLY SHALL NOT BE USED. FORMS SHALL BE FREE OF RUST, GREASE OR OTHER FOREIGN SURFACES THAT MAY DISCOLOR THE FINISHED CONCRETE.

16 WALL TIES AT RETAINING WALLS SHALL BE FABRICATED SO THAT ENDS OR END FASTENERS CAN BE REMOVED WITHOUT CAUSING SPALLING OF FACE OF CONCRETE. TIES SHALL BE PROVIDED WITH A WATER SEAL FEATURE. REMOVE ENDS OF FORM TIES SUCH THAT THE EMBEDDED PORTION OF TIE IS AT LEAST 3/4 INCH FROM THE FORMED CONCRETE FACE. PATCH TIE HOLES IMMEDIATELY AFTER REMOVAL OF FORMS.

CONCRETE FINISHING

1 REPAIR OF SURFACE DEFECTS - DEFECTIVE AREAS SHALL BE REPAIRED IMMEDIATELY AFTER REMOVAL OF FORMS. HONEYCOMBED AND OTHER DEFECTIVE AREAS SHALL BE REMOVED DOWN TO SOUND CONCRETE. THE DEFECTIVE AND SURROUNDING AREA SHALL BE DAMPENED AND A BONDING GROUT APPLIED TO THE AREA. BONDING GROUT SHALL CONSIST OF APPROXIMATELY ONE PART CEMENT TO ONE PART FINE SAND PASSING A NO. 30 SIEVE. MIX GROUT TO THE CONSISTENCY OF A THICK CREAM AND BRUSH THOROUGHLY INTO THE SURFACE.

PATCHING MORTAR SHALL BE OF THE SAME MATERIALS AND APPROXIMATELY THE SAME PROPORTIONS AS CONCRETE EXCEPT THAT COARSE AGGREGATE SHALL BE OMITTED. PREPARE MORTAR WITH NO MORE THAN ONE PART CEMENT TO 2 1/2 PARTS SAND. USE WHITE PORTLAND CEMENT FOR PART OF THE GRAY CEMENT TO MIX A MORTAR OF A COLOR TO MATCH THE SURROUNDING CONCRETE. USE NO MORE WATER THAN NECESSARY AND MIX MORTAR TO THE STIFFEST CONSISTENCY THAT WILL PERMIT PLACING.

AFTER SURFACE WATER FROM THE BONDING GROUT HAS DISSAPATED, THOROUGHLY BRUSH PATCHING MORTAR INTO THE BONDING GROUT.

IN LIEU OF USE OF BONDING GROUT, A LATEX BONDING AGENT MAY BE USED.

2 ALL CONCRETE SURFACES EXPOSED TO VIEW SHALL RECEIVE A RUBBED FINISH.

WATERSTOPS

1 WATERSTOPS AT EXPANSION JOINTS SHALL BE 9 INCH RIBBED PVC WITH 1" CENTERBULB. ALL OTHER WATERSTOPS SHALL BE 6 INCH RIBBED PVC OR PREFORMED PLASTIC SEALING TYPE WATERSTOP SUCH AS SYNKO-FLEX. PLASTIC SEALING TYPE WATERSTOP SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

2 PVC WATERSTOPS SHALL BE SPLICED VIA FUSION TECHNIQUES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3 WATERSTOP JUNCTIONS AT BASE OF EXPANSION JOINTS - IF PVC WATERSTOPS ARE USED FOR BOTH THE EXPANSION JOINTS AND THE CONSTRUCTION JOINT BETWEEN WALL AND FOOTING, THE JUNCTIONS AT THE BASE OF THE EXPANSION JOINT SHALL CONSIST OF A PREFABRICATED FLAT TEE SECTION.

IF PLASTIC TYPE WATERSTOP IS USED AT CONSTRUCTION JOINT BETWEEN WALL AND FOOTING, THEN THE PVC WATERSTOP AT THE EXPANSION JOINT SHALL BE EMBEDDED 3 INCHES MINIMUM INTO THE TOP OF THE FOOTING. THE PLASTIC TYPE WATERSTOP SHALL THEN BE CONTINUOUS ACROSS THE VERTICAL EXPANSION JOINT WATERSTOP.

SEALANT

1 SEALANT AT JOINTS SHALL CONSIST OF POLYURETHANE BASED NON-SAG ELASTOMERIC SEALANT FOR USE IN WATER IMMERSION APPLICATIONS. SEALANT SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, INCLUDING USE OF A PRIMER AS REQUIRED. AN ACCEPTABLE PRODUCT IS SIKAFLEX 1A SEALANT WITH SIKAFLEX PRIMER 429 AS MANUFACTURED BY SIKA CORPORATION.

INSTALLATION OF REBAR INTO EXISTING CONCRETE

1 REBAR INSTALLED INTO EXISTING CONCRETE SHALL BE DRILLED AND ANCHORED USING HILTI HIT-HY 200 ADHESIVE, USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. EXTRA CARE SHALL BE USED TO PROPERLY CLEAN HOLES PRIOR TO INSTALLATION OF ADHESIVE AND RODS. HOLE CLEANING SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS, BUT SHALL INCLUDE BLOWING THE DRILLED HOLE OUT WITH COMPRESSED AIR FOLLOWED BY CLEANING WITH A BRUSH AND FINAL CLEANING WITH COMPRESSED AIR. COMPRESSED AIR SHALL BE APPLIED TO THE BOTTOM OF THE HOLE USING A NOZZLE EXTENSION FOR HOLE CLEANING. ADHESIVE SHALL COMPLETELY FILL THE HOLE AFTER INSTALLATION OF THE REBAR.

SUBMITTALS

THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. WORK ASSOCIATED WITH THESE ITEMS SHALL NOT COMMENCE UNTIL THE SUBMITTALS HAVE BEEN REVIEWED AND RETURNED BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING:

1 TEST DATA AND MIX DESIGNS FOR EACH TYPE AND STRENGTH OF CONCRETE SPECIFIED.

2 REINFORCING STEEL SHOP DRAWINGS DETAILING REINFORCEMENT FABRICATION AND BAR PLACEMENT. SHOP DRAWINGS SHALL CLEARLY INDICATE THE LOCATION, SIZE, SPACING, SPLICES AND PIECEMARK FOR ALL REINFORCING STEEL. THE SHOP DRAWINGS SHALL PROVIDE SUFFICIENT DETAIL TO PERMIT PLACEMENT OF REINFORCEMENT WITHOUT THE USE OF THE DESIGN DRAWINGS. THE SHOP DRAWINGS SHALL INCLUDE A COMPLETE BILL OF MATERIALS FOR ALL REINFORCING STEEL. FABRICATION OF REINFORCING STEEL SHALL NOT COMMENCE UNTIL THE ENGINEER HAS COMPLETED THE REVIEW OF THE SHOP DRAWINGS.

3 PROPOSED LAYOUT AND LOCATION OF CONCRETE CONSTRUCTION AND CONTROL JOINTS.

4 PROPOSED METHOD OF CONCRETE CURING AND PRODUCT DATA FOR ANY CURING COMPOUNDS PROPOSED FOR USE ON THE PROJECT.

5 LABORATORY TEST RESULTS FOR CONCRETE CYLINDER COMPRESSION TESTS AND FILL COMPACTION TESTS.

TESTING LABORATORY REQUIREMENTS

THE CONTRACTOR SHALL SECURE THE SERVICES OF A COMMERCIAL TESTING LABORATORY TO PERFORM ALL REQUIRED MATERIALS TESTS AND INSPECTIONS.

1 ONE SET OF CONCRETE TEST CYLINDERS SHALL BE OBTAINED FOR EVERY 50 CUBIC YARDS OF CONCRETE PLACED, OR ANY PORTION THEREOF PLACED IN A SINGLE DAY, AS FOLLOWS:

A FIVE (5) CONCRETE TEST CYLINDERS SHALL BE MOLDED FROM EACH SAMPLE AND CURED ACCORDING TO ASTM C 31. COMPRESSIVE TESTS SHALL BE PERFORMED ON ONE CYLINDER AT 7 DAYS AND THREE CYLINDERS AT 28 DAYS. THE FIFTH CYLINDER SHALL BE RETAINED FOR 56 DAYS AND TESTED ONLY IF THE AVERAGE STRENGTH OF THE 28 DAYS TESTS DO NOT MEET THE MINIMUM REQUIRED COMPRESSIVE STRENGTH.

B A SLUMP TEST AND TEMPERATURE MEASUREMENT SHALL BE PERFORMED FOR EACH SAMPLE.

C COMPUTATION OF WATER/CEMENT RATIO, AS REQUIRED OR DIRECTED BY THE ENGINEER.

2 ADDITIONAL CYLINDERS MAY BE MADE AND TESTED, AS NECESSARY, FOR ACCELERATED REMOVAL OF FORMS OR ERECTION OF MEMBERS TO VERIFY THAT NECESSARY STRENGTHS HAVE BEEN OBTAINED. SUCH CYLINDERS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.

3 FIELD DENSITY TESTS SHALL BE PERFORMED ON THE SUBGRADE AND EACH LIFT OF FILL MATERIAL. ONE DENSITY TEST WILL BE REQUIRED FOR EACH 5,000 SQUARE FEET, BUT NOT LESS THAN THREE (3) TESTS PER LIFT.

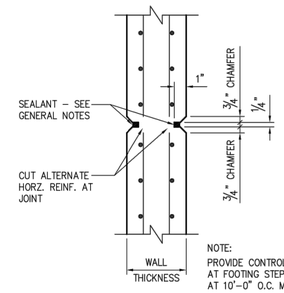
4 REINFORCED CONCRETE CONSTRUCTION - SERVICES ARE TO BE PROVIDED AS FOLLOWS:

A INSPECT EXCAVATIONS AND REINFORCING STEEL PLACEMENT PRIOR TO CONCRETE POURS.

5 THE CONTRACTOR SHALL COOPERATE AND COORDINATE FULLY WITH THE TESTING LABORATORY.

6 IN THE EVENT THAT CONCRETE ELEMENTS OR MEMBERS DO NOT ACHIEVE THE SPECIFIED MINIMUM COMPRESSIVE STRENGTHS, THE ENGINEER MAY REQUIRE ADDITIONAL ANALYSIS, TESTING OR REMOVAL AND REPLACEMENT OF MEMBERS. ANY AND ALL SUCH ADDITIONAL ANALYSIS OR TESTING SHALL BE AT THE CONTRACTOR'S EXPENSE, WHETHER SUCH ANALYSIS OR TESTING DEMONSTRATES ADEQUATE STRENGTH OR NOT. REPLACEMENT OF ANY MEMBERS DEEMED QUESTIONABLE OR INADEQUATE BY THE ENGINEER SHALL BE AT THE CONTRACTOR'S EXPENSE.

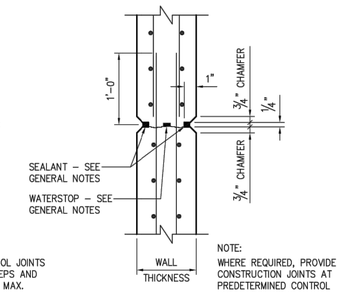
7 THE CONTRACTOR SHALL ARRANGE FOR COPIES OF THE INSPECTION AND TESTING REPORTS TO BE SENT TO THE ENGINEER. COPIES OF TEST AND INSPECTION REPORTS SHALL BE FORWARDED TO THE ENGINEER AS QUICKLY AS POSSIBLE FOLLOWING COMPLETION OF THE TESTS AND INSPECTIONS.



NOTE:
PROVIDE CONTROL JOINTS AT FOOTING STEPS AND AT 10'-0" O.C. MAX.

PLAN

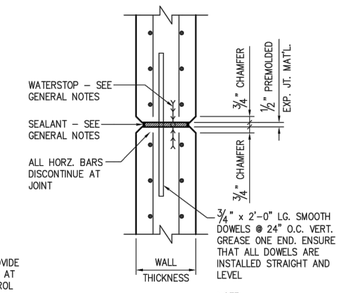
1 RETAINING WALL CONTROL JOINT
TYPICAL DETAIL
N.T.S.



NOTE:
WHERE REQUIRED, PROVIDE CONSTRUCTION JOINTS AT PREDETERMINED CONTROL JOINT LOCATIONS.

PLAN

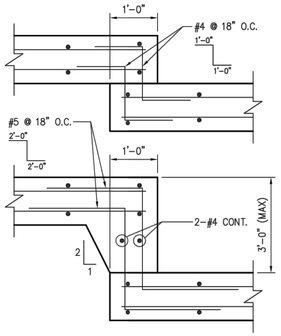
2 RETAINING WALL CONSTRUCTION JOINT
TYPICAL DETAIL
N.T.S.



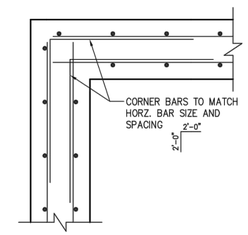
NOTE:
SEE PLAN FOR LOCATION OF EXPANSION JOINTS.

PLAN

3 RETAINING WALL EXPANSION JOINT
TYPICAL DETAIL
N.T.S.

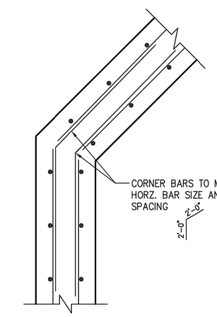


4 STEPPED FOOTING DETAILS
TYPICAL DETAIL
N.T.S.



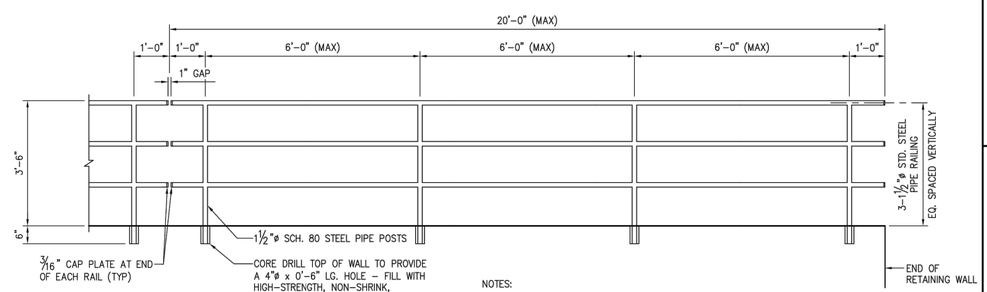
PLAN

5 WALL CORNER
TYPICAL DETAIL
N.T.S.



PLAN

6 WALL CORNER
TYPICAL DETAIL
N.T.S.



NOTES:
1. ALL PIPE RAILINGS AND POSTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. LENGTH OF EACH RAIL SEGMENT SHALL NOT EXCEED 20'-0" LONG.
3. SEE 1/S-2 FOR LIMITS OF HANDRAIL.

7 HANDRAIL
TYPICAL DETAIL
N.T.S.

NO.	REVISION	BY	DATE

STATE OF TEXAS
LUIS G. CARO
116830
LICENSED PROFESSIONAL ENGINEER
4/5/2017

PROJECT NO. 011-4445
DESIGNED BY: ARB
DRAWN BY: ARB
CHECKED BY: LGC
APPROVED BY: LGC
DATE: 4/5/2017

Pickett, Kelm & Associates, Inc.
Consulting Structural Engineers
4100 Duval Road, Bldg. A, Suite 103
Austin, Texas 78759 • Phone 512-345-5538
Texas Registration No. F-1431

CRESCENT BELTERRA
SECTION 21-2 SPLITTER BOX

DRIPPING SPRINGS, TEXAS

STRUCTURAL
GENERAL NOTES, SECTIONS,
AND TYPICAL DETAILS

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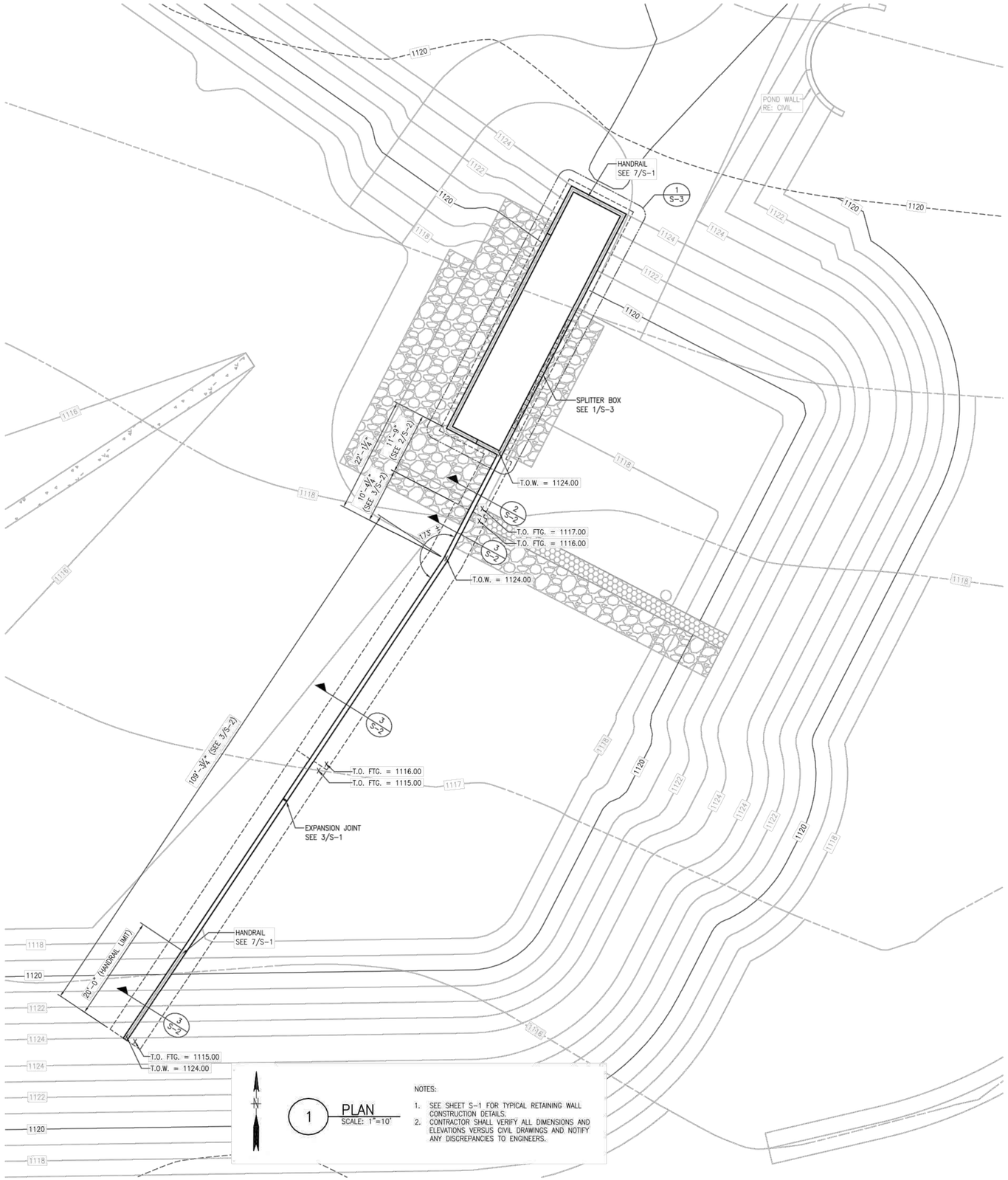
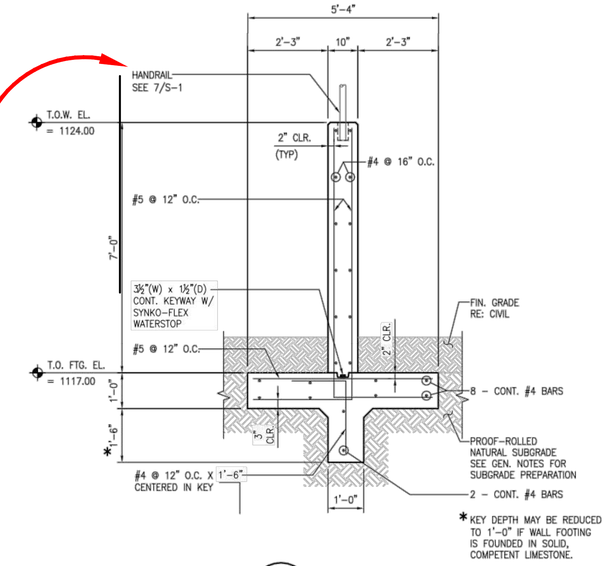
SHEET NO.
S-1



1 PLAN
SCALE: 1"=10'

NOTES:

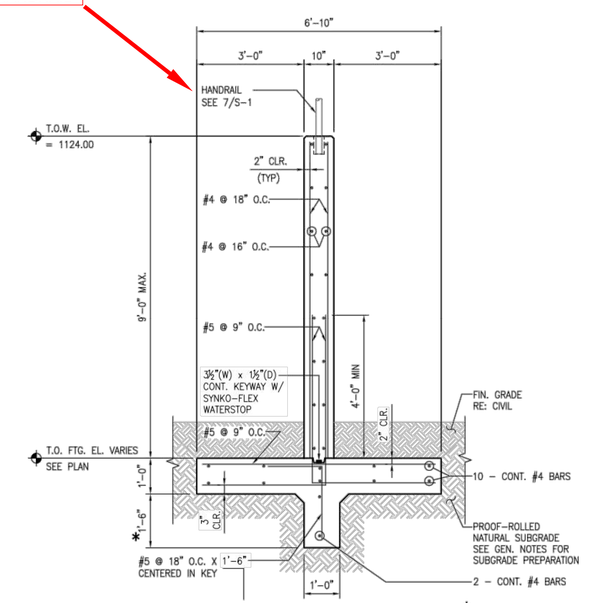
1. SEE SHEET S-1 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS VERSUS CIVIL DRAWINGS AND NOTIFY ANY DISCREPANCIES TO ENGINEERS.



* KEY DEPTH MAY BE REDUCED TO 1'-0" IF WALL FOOTING IS FOUNDED IN SOLID, COMPETENT LIMESTONE.

2 SECTION
SCALE: 1/2" = 1'-0"

AS-BUILT
FENCE INSTALLED
IN LIEU OF HANDRAIL



* KEY DEPTH MAY BE REDUCED TO 1'-0" IF WALL FOOTING IS FOUNDED IN SOLID, COMPETENT LIMESTONE.

3 SECTION
SCALE: 1/2" = 1'-0"

NO.	REVISION	BY	DATE

STATE OF TEXAS
LUIS G. CARO
116830
LICENSED
PROFESSIONAL ENGINEER
4/5/2017

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Pickett, Kelm & Associates, Inc.
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4100 Duval Road, Bldg. 4, Suite 103
Austin, Texas 78759 • Phone 512-345-5538
Texas Registration No. F-1491

CRESCENT BELTERRA
SECTION 21-2 SPLITTER BOX

DRIPPING SPRINGS, TEXAS

RETAINING WALL PLAN
& SECTIONS

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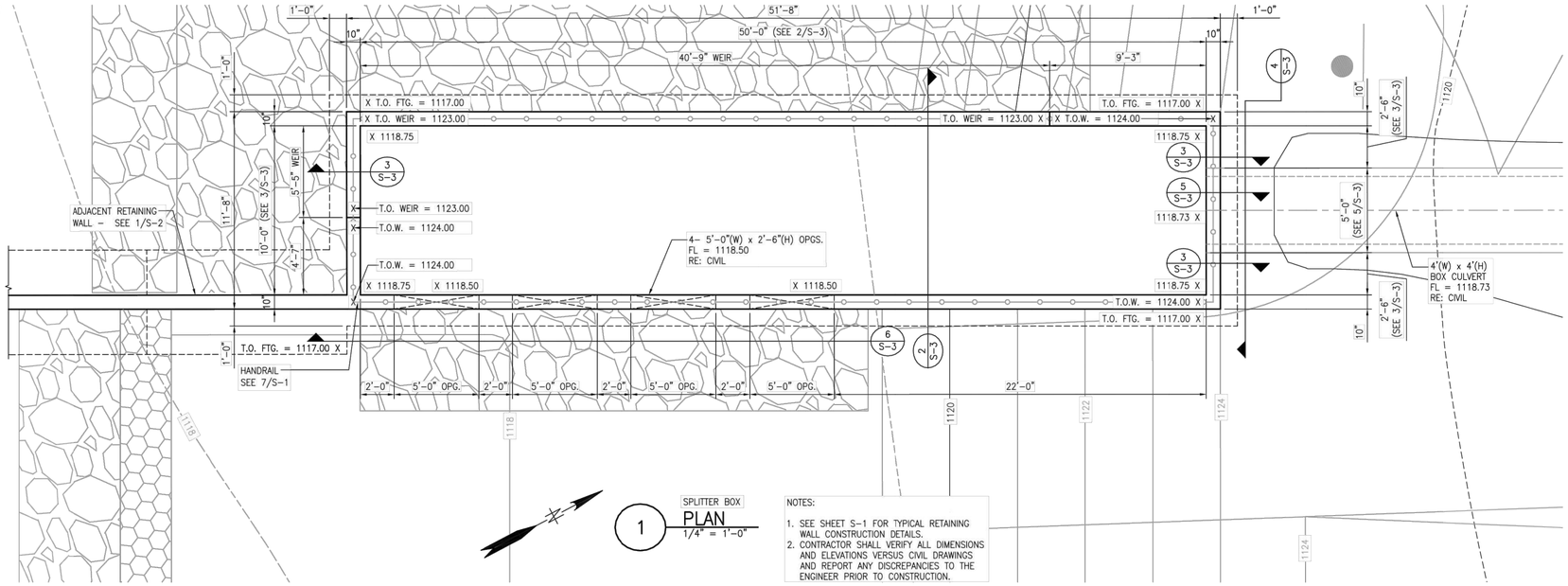
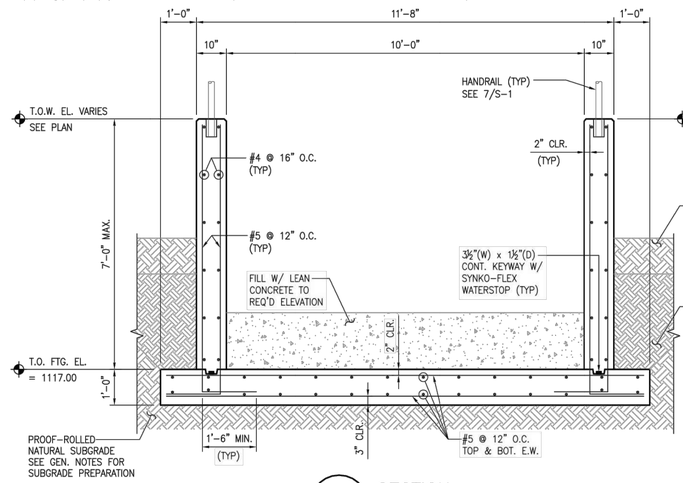
SHEET NO.
S-2



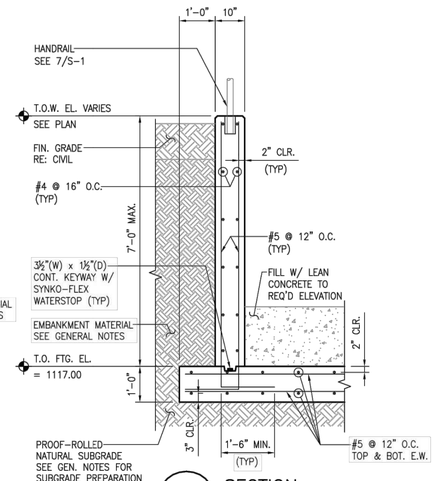
1 SPLITTER BOX PLAN
1/4" = 1'-0"

NOTES:

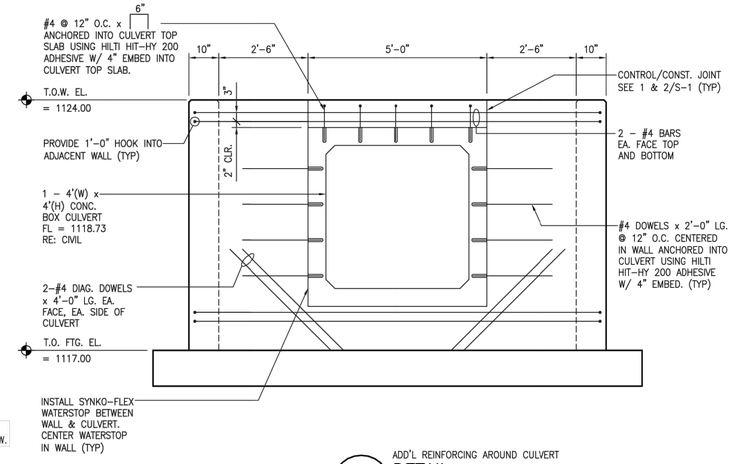
1. SEE SHEET S-1 FOR TYPICAL RETAINING WALL CONSTRUCTION DETAILS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS VERSUS CIVIL DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.



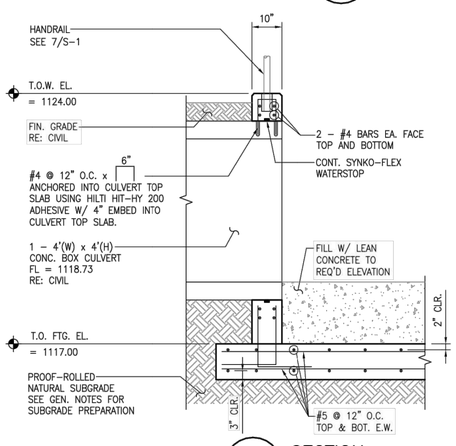
2 SECTION
SCALE: 1/2" = 1'-0"



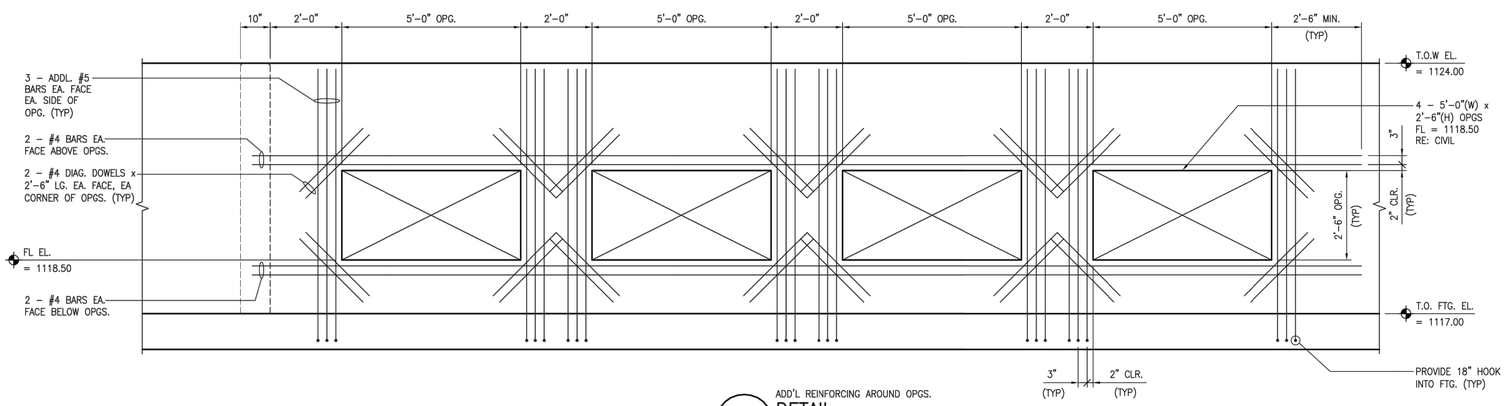
3 SECTION
SCALE: 1/2" = 1'-0"



4 ADD'L REINFORCING AROUND CULVERT DETAIL
1/2" = 1'-0"



5 SECTION
SCALE: 1/2" = 1'-0"



6 ADD'L REINFORCING AROUND OPGS. DETAIL
1/2" = 1'-0"

NO.	REVISION	BY	DATE

STATE OF TEXAS
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CRESCENT BELTERRA
SECTION 21-2 SPLITTER BOX

DRIPPING SPRINGS, TEXAS

SPLITTER BOX PLAN, SECTIONS & DETAILS

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SHEET NO.
S-3

Stormwater Pollution Prevention Plan (SWP3) Template for the Construction General Permit

Site Name:	Hays County Water & Improvement District No. 2
Address:	Mesa Verde Drive, Belterra, Texas 78737
RN:	
Contact Name:	Lauren Barzilla, P.E.
Contact Information:	Lauren.barzilla@burgessniple.com

Prepared by
Program Support and Environmental Assistance Division

RG-639
May 2023

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How to Use This Template

If you are an operator of a small or large construction site subject to the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (TXR150000, CGP) for stormwater discharges, use this document to help prepare a Stormwater Pollution Prevention Plan (SWP3). It is not intended for industrial facilities or facilities regulated by other wastewater permits.

It includes worksheets, links to applicable forms, references to regulations, record retention timeframes, and other technical guidance in each section. The worksheets are suggested templates to help you collect required information. You may print more copies of worksheets as needed. **Place records from your site in their appropriate section to keep them organized.**

Where to Find More Information

- Request records from TCEQ by contacting the **Central Records Section** at 512-239-2900 or cfrreq@tceq.texas.gov.
- Search for TCEQ forms[1] using a keyword, form number, or subject.
- See Part III of TXR150000[2] for a complete list of SWP3 requirements.
- Use our assistance tools[3] to help you follow permit requirements.

This document is a general guide to requirements for construction sites under the CGP. It does not replace the laws and regulations in the general permit, which take priority over any information supplied here.

Local governments and other state and federal agencies may have more rules and requirements. As the owner or operator of the site, you must ensure compliance with all applicable laws and regulations.

If you have questions or need more information about TXR150000 requirements, please refer to the Small Business and Local Government Assistance (SBLGA) webpage.[4] For more help, call our SBLGA Hotline at 800-447-2827 or email us at TexasEnviroHelp@tceq.texas.gov.

1. www.tceq.texas.gov/search_forms.html
2. www.tceq.texas.gov/downloads/permitting/stormwater/general/construction/2023-cgp-txr150000.pdf
3. www.tceq.texas.gov/assistance/water/stormwater/sw-construction.html
4. www.texasenvirohelp.org

Definitions

TXR150000 Part I. Definitions

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, maintenance procedures, structural controls, local ordinances, and other management practices to prevent or reduce the discharge of pollutants. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spills or leaks, sludge or waste disposal, or drainage from raw material storage areas.

Commencement of Construction: The initial disturbance of soils associated with clearing, grading, or excavation activities, as well as other construction-related activities (e.g., demolition, grubbing, stockpiling of fill material, placement of raw materials at the site).

Common Plan of Development: A construction activity that is completed in separate stages, separate phases, or in combination with other construction activities. A common plan of development (also known as a "common plan of development or sale") is identified by the documentation for the construction project that identifies the scope of the project, and may include plats, blueprints, marketing plans, contracts, building permits, a public notice or hearing, zoning requests, or other similar documentation and activities.

Construction Activity: Includes soil disturbance activities, including clearing, grading, excavating, construction-related activity (e.g., stockpiling of fill material, demolition), and construction support activity. This does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (e.g., the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing rights-of-way, and similar maintenance activities). Regulated construction activity is defined in terms of small and large construction activity.

a. **Small Construction Activity:** Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than one (1) acre and less than five (5) acres of land. This also includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one (1) and less than five (5) acres of land. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site.

b. **Large Construction Activity:** Construction activities that result in land disturbance of equal to or greater than five (5) acres of land. Also includes the disturbance of less than five (5) acres of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than five (5) acres of land. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site.

Construction Support Activity: A construction-related activity that specifically supports construction activity, which can involve earth disturbance or pollutant-generating activities of its own, and can include, but are not limited to, activities associated with concrete or asphalt batch plants, rock crushers, equipment staging or storage areas, chemical storage areas, material storage areas, material borrow areas, and excavated material disposal areas. Construction support activity must only directly support the construction activity authorized under this general permit.

Control Measure: Any BMP, including structural and non-structural controls, or other method (including effluent limitations) used to prevent or reduce the discharge of pollutants to water in the state.

Dewatering: The act of draining accumulated stormwater or groundwater from building foundations, vaults, trenches, and other similar points of accumulation.

Discharge: For the purposes of this permit, the drainage, release, or disposal of pollutants in stormwater and certain non-stormwater from areas where soil disturbing activities (e.g., clearing, grading, excavation, stockpiling of fill material, and demolition), construction materials or equipment storage or maintenance (*e.g.*, fill piles, borrow area, concrete truck wash out, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located.

Facility or Activity: For the purpose of this permit, referring to a construction site, the location of construction activity, or a construction support activity that is regulated under this general permit, including all contiguous land and fixtures (e.g., ponds and materials stockpiles), structures, or appurtenances used at a construction site or industrial site.

Final Stabilization: A construction site status where all soil disturbing activities at the site have been completed and a uniform (that is, evenly distributed, without large bare areas) perennial vegetative cover with a density of at least 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, or gabions) have been employed.

Infeasible: not technologically possible, or not economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer System (MS4): A separate storm sewer system owned or operated by the United States, a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over the disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, that discharges to surface water in the state.

Operator: The person(s) associated with a large or small construction activity that is either a primary or secondary operator as defined below –

Primary Operator: The person(s) associated with construction activity that meets either of the following two criteria:

a. The person(s) has on-site operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or

b. The person(s) has day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with a Stormwater Pollution Prevention Plan (SWP3) for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWP3 or comply with other permit conditions).

Secondary Operator: the person or entity, often the property owner, whose operational control is limited to:

a. The employment of other operators, such as a general contractor, to perform or supervise construction activities; or

b. The ability to approve or disapprove changes to construction plans and specifications, but who does not have day-to-day on-site operational control over construction activities at the site.

Secondary operators must either prepare their own SWP3 or participate in a shared SWP3 that covers the areas of the construction site where they have control over the construction plans and specifications.

If there is not a primary operator at the construction site, then the secondary operator is defined as the primary operator and must comply with the requirements for primary operators.

Outfall: For the purpose of permit TXR150000, a point source at the point where stormwater runoff associated with construction activity discharges to surface water in the state and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances that connect segments of the same stream or other water of the U.S and are used to convey waters of the U.S.

Point Source: Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff (Title 40, Code of Federal Regulations, Section 122.2).[5]

Pollutant: (from Texas Water Code Section 26.001(13)[6]) Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, filter backwash, munitions,

5. www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-122/subpart-A/section-122.2
6. https://statutes.capitol.texas.gov/Docs/WA/htm/WA.26.htm

chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into any water in the state. This term does not include tail water or runoff water from irrigation or rainwater runoff from cultivated or uncultivated rangeland, pastureland, and farmland. For the purpose of permit TXR150000, the term “pollutant” includes sediment.

Temporary Stabilization: A condition where exposed soils or disturbed areas are provided a protective cover or other structural control to prevent the migration of pollutants. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either permanent stabilization can be achieved or until further construction activities take place.

Notes

Shared SWP3 Certification Signature Page

TXR150000 Part III

Operators of small and large construction activities must independently obtain TXR150000 authorizations but may work together with other regulated operators to prepare and implement a single, comprehensive shared SWP3. This SWP3 should clearly show which operator is responsible for completing each shared requirement of stormwater duties.

Review Primary and Secondary Operators under the Construction General Permit for Stormwater Discharges (TXR150000)[7] (RG-468) for more information on the different responsibilities between primary vs. secondary operators.

If this SWP3 is shared by more than one entity, all operators need to be named below:

Signature: _____ Date: _____

Print Name: _____

Job Title: _____ TPDES#: _____

Signature: _____ Date: _____

Print Name: _____

Job Title: _____ TPDES#: _____

Signature: _____ Date: _____

Print Name: _____

Job Title: _____ TPDES#: _____

Primary Operator(s):

_____

Secondary Operator(s):

_____

7. www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg-468.pdf

Notes

General Site Information

Include

- General Site Information (see page 13)
- Schedule or Sequence of Major Grading Activities (see page 18)
- Acreage and Soil Type (see page 22)
- General Construction Location and Detailed Site Maps (see page 26)
- Site Description of Support Facilities (see page 30)
- Authorization Documents and Certifications (see page 34)

Instructions

Write a short description about all construction activities at your site, including information on soil type and any water bodies receiving discharges. Record the schedule or sequence of major grading activities. Develop general location and detailed site maps. Include copies of the Construction General Permit TXR150000 (or link to the current version on the TCEQ webpages), your authorization certificate, and other associated documents.

Updates and Recordkeeping

Keep this information up to date for your construction site. Update your SWP3 within seven days of any changes to site activities, processes, or characteristics.

Notes

General Site Information: Instructions

TXR150000 Part III Section F.1.a – b, and F.4.b - c

Describe Your Construction Activities

Write a short description about all construction activities at your site. Be as detailed as possible and include all construction activities that will disturb soil or generate pollutants. Include a description of construction and waste materials stored on-site. This part of your SWP3 should allow a TCEQ investigator or personnel conducting inspections, to read and understand the "what," "how," "where," and "when" of all construction activities taking place on-site.

List Potential Pollutants

Determine all potential pollutants generated on-site and list their source. See Table 1 below for examples of potential pollutants and pollutant sources.

Table 1. Examples of Potential Pollutants and Pollutant Sources

Potential Pollutants	Potential Pollutant Sources
Oil and grease from vehicles Mud from tires Paint/Stain Soaps/Solvents Stucco Cement Sediment from disturbed soil	Paving operations Concrete washout Paint and stucco washout Water disposal Solid waste disposal Dewatering operations

List Water Bodies Receiving Discharges

Your stormwater discharges may affect water quality. Identify bodies of water that might receive discharges from your site, provide their location, and note whether they are impaired. Provide a written description or use GPS coordinates to show the location of your stormwater discharges.

- Use our Surface Water Quality (Segments) Viewer[8] to find water bodies and segments downstream of your construction site.
- Check the Texas Integrated Report of Surface Water Quality[9] for a list of impaired water bodies.

8. www.tceq.texas.gov/gis/segments-viewer
9. www.tceq.texas.gov/waterquality/assessment

Discharges to water bodies with a total maximum daily load[10] (TMDL) are not permitted if they contain any pollutants the water is impaired by, unless consistent with the EPA-approved TMDL.

- Additional limitations, conditions, and requirements apply to these discharges.

Facilities located within the Edwards Aquifer Recharge or Contributing Zones may have additional requirements.

- See the Edwards Aquifer Protection Program[11] for more information.

10. www.tceq.texas.gov/waterquality/tmdl/nav/tmdlsegments#list-of-segments-with
11. www.tceq.texas.gov/permitting/eapp/program.html

Notes

General Site Information: Worksheet

Construction Start Date:

Provide a general description of the construction activity:

The Hays County WCID No. 2 Pinnacle Park project will be on approximately 89.59 acres of undeveloped land located about half a mile south of Belterra Drive west of Mesa Verde Drive in Belterra Subdivision. The project consists of constructing a park and trail system along the City of Dripping Springs ETJ and Hays County.

Provide a general description of construction materials and wastes stored on-site:

To construct the proposed facilities needed for the park and trail system, the materials include but aren't limited to concrete, mulch, river rock, engineered wood fiber (EWF), decomposed granite (DG) and pastureland. Erosion controls include but aren't limited to earthen materials and silt fence.

Potential Pollutants	Source
Sediment	Soil displacement from grading and trail construction
Petroleum Products	Onsite construction vehicles and equipment
Chemical Waste	Concrete pouring
Nutrients	Decomposition of mulch, EWF and disturbed pasture land
Turbidity	Runoff from DG paths, disturbed soils, and river rock areas

Stormwater Discharge Location	Name of Receiving Water	Is the water impaired for any pollutants?
West side of the park improvements	Tributaries of Bear Creek, a tributary of Onion Creek which discharges to the Colorado River.	No, temporary erosion controls will be in place prior to soil stabilization. The existing water quality BMPs are adequate to reduce the pollutant load for this project.

Schedule or Sequence of Major Grading Activities: Instructions

TXR150000 Part III Section F.1.c and F.2.b.ii

Describe the Schedule or Sequence of Major Activities

Write a short description of the intended schedule or sequence of major construction activities and construction support activities that will disturb soils for major portions of the site.

- Describe the project phase (time period) when the activity will occur.
- Estimate how many acres the activity will disturb.
- Describe where the activity will take place. It may be helpful to divide large construction sites into sections to better show where the activity will take place.
- Provide the name of who is responsible for this part of the project.
- Describe the activity (e.g., clearing, excavating, grading, and structure construction).

Notes

Schedule or Sequence of Major Grading Activities: Worksheet

Construction Phase Number: 1	
Projected Start Date: May 2026	**Projected End Date:** September 2026
Acreage Disturbed: 3.35	**Location:** BELTERRA SEC 20-2, BLOCK B, Lot 7 and BELTERRA SEC 21-2, BLOCK A, Lot 37
Responsible Party: Contractor-TBD	

Description of activity disturbing the soil:

Earthwork for grading park and trail improvements.

Construction Phase Number:	
Projected Start Date:	**Projected End Date:**
Acreage Disturbed:	**Location:**
Responsible Party:	

Description of activity disturbing the soil:

Notes

Acreage and Soil Type: Instructions

TXR0150000 Part III Section F.1.d – e

Provide Acreage of Site and Supporting Activities

Record the number of acres of the whole property and the total number of acres where construction activities and construction support activities occur.[12] The total number of acres where construction activities occur is the area under the control of the operator.

Construction support activities include:

- Equipment staging or storage areas.
- Construction materials staging or storage areas.
- Chemical storage areas.
- Areas where concrete or asphalt batch mixing plants or rock crushers will be located.
- Vehicle repair or fueling areas.

Identify Soil Type Information

Data about the soil type or quality of discharge at the site must be included in your SWP3. Soil description may include approximate percentage of rock, soil, sand, and clay.

Discharge descriptions may include terms such as “silty,” “suspended solids,” or “sandy” and should agree with the soil type that you described. To accurately describe site discharge, you may need to visually inspect a sample collected of your discharge during a storm event.

If you are unsure of your site’s soil type, you can use USDA’s Web Soil Survey Tool.[13].

12. The acreages of the whole property and where construction and construction activities occur may be different from each other.
13. https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Notes

Acreage and Soil Type: Worksheet

Total Acreage of Project Property: 89.59 Acres

Total Acreage of Disturbed Soil: 3.35 Acres

Provide a description of soil type at the project site:

The soil type generally found at the project site is approximately 58.8% Brackett Rock output-Comfort complex (BtD) and 41.2% Bracket-Rock outcrop-Real complex (BtG).

Notes

General Construction Location and Detailed Site Maps: Instructions

TXR150000 Part III Section F.1.f – g, n, and Part VI

Develop Maps of Your Construction Site

Your maps must include all elements required by the permit and be easy to read and interpret. Table 2 on the next page summarizes these requirements.

On one map, show the general location of the construction site within a city or county. The general location map may be copied from:

- A city or county map.
- Downloaded from a map website.
- Photocopied from any map that will show where your site is in relation to the surrounding area.

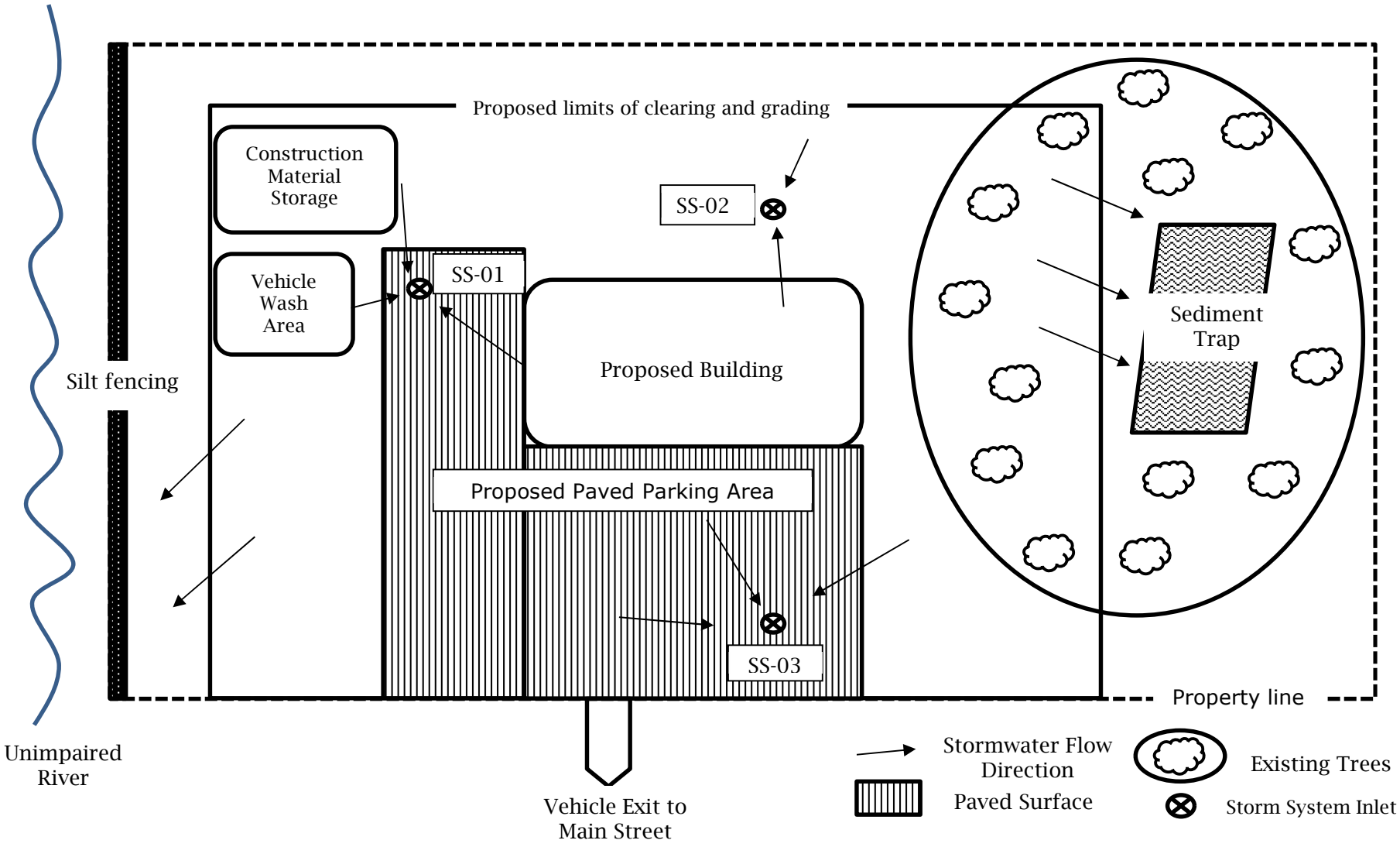
Your other map(s) must show detailed information about your site. For sites within a larger common plan of development, clearly show your area(s) of control within the larger plan. You can create a single detailed site map, but we encourage you to use multiple maps to avoid overcrowding and increase readability. See Figure 1 for an example of a detailed site map.

Table 2. Basic Map Requirements for SWP3s

Map Type	Include
General Location Map	• The general location of your construction site (circle or highlight) • A compass
Detailed Site Map(s)	• Property boundary(ies) • Drainage patterns and approximate slopes predicted before and after major grading activities • Areas where soil disturbance will occur (note any phasing), including demolition activities • Locations of all controls and buffers, either planned or in place • Location where temporary or permanent stabilization practices are expected to be used • Locations of construction support activities, including those off-site • Surface waters either at, adjacent, or near the site[14] Indicate whether the waters are impaired • Locations where stormwater discharges from the site directly to surface water body or a municipal separate storm sewer system • Vehicle wash area • Designated points on the site where vehicles will exit onto paved roads[15] • Concrete wash out area

14. This includes any receiving waters within the site and all receiving waters within one mile downstream of the site's discharge point(s).
15. For instance, this applies to construction transition from unstable dirt areas to exterior paved roads.

Figure 1. Detailed Site Map Example



Notes

Site Description of Support Activities: Instructions

TXR150000 Part III Section F.1.h and n

Describe Your Support Activities

Describe and give the location of any construction support activities. The location(s) description(s) may be “on-site,” a physical address, or descriptive directions from the construction project site to the support activity.

Examples of construction support activities include, but are not limited to:

- Asphalt plants
- Concrete batch plants
- Borrow pits
- Paving operations
- Concrete, paint, and stucco washout and water disposal

Notes

Site Description of Support Activities: Log Sheet

Activity	Description	Location
Trail and park improvements	Construction of concrete trails and appurtenances, mulch trail, decomposed granite trail, river rock surfacing, and engineered wood fiber surfacing.	BELTERRA SEC 20-2, BLOCK B, Lot 7 and BELTERRA SEC 21-2, BLOCK A, Lot 37

Notes

Authorization Documents and Certifications: Instructions

TXR050000 Part III Section F.1.j – l and F.5

Keep all Permit Documents

Include the following documents in this section:

1. A hard copy of the general permit TXR150000[16] or a readily available electronic version.

2. A copy of your Notice of Intent (NOI) and the acknowledgement certificate you received from TCEQ with your unique permit authorization identification number.
    a. For secondary operators of large sites and for all operators of small sites, include a copy of the construction site notice with an original signed signature instead of the NOI and acknowledgement certificate.

3. If signatory authority is delegated to an authorized representative, keep a copy of the notification[17].
    a. Primary operators of large construction activities must submit the Delegation of Signatories to Reports form electronically through STEERS[18] If you qualify for an electronic reporting waiver, submit by paper using Delegation of Signatories to Reports form[19] (TCEQ-20403).

    b. Operators of small construction activities must submit notification by paper using Delegation of Signatories to Reports form (TCEQ-20403).

4. Copies of your Edwards Aquifer compliance documents[20], such as a Water Pollution Abatement Plan or Contributing Zone Plan, and TCEQ plan approval letter, if applicable.

16. www.tceq.texas.gov/downloads/permitting/stormwater/general/construction/2023-cgp-txr150000.pdf
17. See 30 Texas Administrative Code (30 TAC) Subsection 305.128
18. https://www3.tceq.texas.gov/steers/
19. www.tceq.texas.gov/downloads/assistance/water/stormwater/20403.docx
20. See 30 TAC Chapter 213

Notes

Pollution Prevention Measures and Controls

Include

- Best Management Practices and Sediment Controls (see page 38)
- Allowable Non-Stormwater Discharges (see page 47)

Instructions

Implement and describe your pollution prevention measures and controls. Perform maintenance as necessary to support the continued effectiveness of stormwater controls, prior to the next rain event if possible.

Updates and Recordkeeping

Be sure to keep this information up to date for your construction site. Update your SWP3 within seven days of any changes to site activities, processes, or characteristics.

Notes

Best Management Practices and Sediment Controls: Instructions

TXR150000 Part III Section F.2, F.3, and F.4(a)

Develop and Implement Best Management Practices (BMPs)

Develop and implement BMPs to reduce any potential or actual discharge of pollutants in stormwater. Implement effective erosion and sediment controls to minimize the discharge of pollutants. When developing BMPs, consider any standard operating procedures that may affect stormwater discharges.

Consider where and how you:

- handle and store materials and waste.
- conduct equipment and machinery maintenance.
- manage stormwater equipment.
- prevent off-site vehicle tracking of pollutants.

See examples of BMPs on page 41.

Know the Difference Between the Types of Basins

See Table 3 on the next page for information on the different types of basins, their purpose, and how you can use them at your site. You can find additional information on sedimentation basins for construction site stormwater runoff control in the EPA Sediment Basin and Rock Dam guidance document.[21]

21. www.epa.gov/system/files/documents/2021-11/bmp-sediment-basins-and-rock-dams.pdf

Table 3. Basin Types

Type of Basin (Pond)	Purpose and Design	How they work
Detention	Holds stormwater runoff from surrounding landscape, roads, rooftops, etc. Functions to trap pollutants in runoff (nutrients, metals, and sediments)	Stormwater is held in the basin and slowly released to nearby water bodies in a structured and controlled manner Reduces how fast runoff enters our natural waterways
Retention	Designed to permanently hold water Slows the flow of runoff so water can be stored for use during drier periods May not have an outlet structure	Collected water may infiltrate into the ground, evaporate, or released slowly in a controlled manner to prevent overflows and flooding May provide level of treatment through storage until natural processes remove contaminants
Sedimentation	Prevent sediment from entering surface water	Collect and detain runoff to allow suspended solids to settle out prior to leaving the site

Identify Your BMPs

List every BMP used on-site with the location and dates they were implemented.[22] Some BMPs may be used in more than one location or implemented at different times throughout the construction project.

If you install sedimentation basins or similar impoundment, include design specifications and other details (volume, dimensions, outlet structure) that will be implemented in compliance with the requirements in Part IV of the general permit. If it is infeasible for you to follow sedimentation basin requirements, include an explanation of why this is the case.

For example:

- If there is not enough physical space for a sedimentation basin at the site, operators may implement an alternative to protect water quality from sediment runoff.
- If local regulations require the use of a non-surface withdrawing outlet structure, such as a perforated riser pipe, operators may implement this alternative outlet structure to comply with local regulations.
- If there is surface level contamination in the sedimentation basin, operators may implement a below surface withdrawing outlet structure to prevent releasing contaminants.

22. If exact date is unknown, list the month and year or quarter and year they were implemented.

Notes

Examples of Best Management Practices (BMPs)

BMPs are not limited to the ones listed below. You can find additional information on BMPs on our Assistance Tools for Construction Stormwater General Permits[23] webpage.

Erosion and Stabilization Practices:

- Protect existing trees and vegetation
- Establish temporary/permanent vegetation
- Slope texturing
- Geotextiles and sod stabilization

Good Housekeeping Practices:

- Regular site sweeps to pick up litter
- Strategically placed trash dumpsters
- Store scrap construction materials in restricted areas
- Store construction materials inside trailers or buildings away from storm events

Sediment Controls:

- Sedimentation basins
- Silt fences
- Swales
- Mulch filter berms
- Rock berms
- Vegetative filter strips

Permanent Stormwater Controls:

- Extended detention basin
- Constructed wetlands
- Retention/Irrigation systems
- Wet basins
- Vegetative filter strips

23. www.tceq.texas.gov/assistance/water/stormwater/sw-construction.html

Notes

BMP: List Sheet

BMP:	
Location	**Date Implemented**

BMP:	
Location	**Date Implemented**

BMP:	
Location	**Date Implemented**

BMP:	
Location	**Date Implemented**

BMP:	
Location	**Date Implemented**

BMP:	
Location	**Date Implemented**

Notes

BMP: Sediment Basin List Sheet

Is your site larger than 10 acres?

☒ **Yes** ☐ **No**

Are there sedimentation basins or traps on-site?

☐ **Yes** ☒ **No**

**If yes, include calculations to show the sedimentation basin will provide sufficient storage to contain runoff from a 2-year, 24-hour storm from each disturbed acre drained within this section.*

**If no, move forward to the next section of the SWP3.*

Approximate Installation Date	
Sedimentation Basin Description *(volume and dimensions)*	
Outlet Structure	

Are sedimentation basins or traps infeasible on-site?

☒ **Yes** ☐ **No**

**If yes, explain why:*

The disturbed area for the project is must smaller than the project area (3.35 acres) and the sediment generated during excavation activities will also be small and the proposed silt fence will be more than adequate at handling any potential sediment.

Notes

Allowable Non-Stormwater Discharges: Instructions

TXR150000 Part II Section A.3 and Part III Section F.9

Identify Allowable Non-Stormwater Discharges

Identify and implement appropriate pollution prevention measures for all allowable non-stormwater discharges. List any of the approved allowable non-stormwater discharges that may apply to your site, how you will prevent pollution from these discharges, and when the pollution control measures will be in place.

Allowable non-stormwater discharges include:

- Emergency fire-fighting activities
- Uncontaminated fire hydrant flushing
- Washing vehicles, buildings, or pavement without detergents or soap
- Uncontaminated water for dust control
- Flushing potable water sources
- Uncontaminated air condition condensate
- Uncontaminated ground or spring water
- Lawn watering or similar irrigation drainage

Notes

Allowable Non-Stormwater Discharges: List Sheet

Discharge	Pollution Prevention Measure(s)	Implementation Date

Notes

Periodic Inspections, Evaluations, Maintenance, and Monitoring

Include

- Inspection Personnel (see page 53)
- Observation and Evaluation of Dewatering Controls (see page 55)
- Inspection of All Controls (see page 61)
- Adverse Conditions (see page 67)

Instructions

Record and describe your inspection and maintenance findings. Explain if any changes or updates are needed to pollution control practices. Document any adverse conditions that prevent site inspections or maintenance activities.

Updates and Recordkeeping

Be sure to keep this information up to date with your construction site. Update your SWP3 within seven days of any changes to site activities, processes, or characteristics.

Notes

Inspection Personnel

TXR150000 Part III Section F.7.b.iii and F.8.a

Identify Inspection Personnel

Personnel conducting site inspections must be knowledgeable of the Construction General Permit TXR150000, the construction activities and construction support activities on-site, and this SWP3. Personnel conducting these inspections do not need to have signatory authority for inspection reports.

Are you knowledgeable of the Construction General Permit?

☐ **Yes** ☐ **No**

Are you knowledgeable of the construction activities at this site?

☐ **Yes** ☐ **No**

Are you knowledgeable of this SWP3?

☐ **Yes** ☐ **No**

**If you answered no to any of the above questions, you are not qualified to conduct these inspections/evaluations.*

If the same qualified personnel conduct each inspection, you can list their name(s) below instead of on each inspection report:

Inspector(s): _____

_____

_____

Notes

Observation and Evaluation of Dewatering Controls: Instructions

TXR150000 Part III Section F.7

Routinely Observe and Evaluate Dewatering Controls and Record Results

Dewatering controls must be observed and evaluated once per day when dewatering discharge occurs. The observation and evaluation report should include:

- Date.
- Name(s) and title(s) of personnel.
- Estimates of the rate (in gallons per day) of discharge.
- Approximate start and end times of dewatering discharge.
- Any indications of pollutants observed at the point of discharge (e.g., color, clarity, presence of oil sheen or odor).
- Major observations such as:
    - locations where erosion and discharges of sediment or other pollutants occurred.
    - locations needing BMP maintenance or additional BMPs.
    - locations where BMPs failed or are inadequate.

Include descriptions of the actions taken in response to the observation and evaluation findings. Your report must contain any incidents of non-compliance. If there are not any incidents of non-compliance, the report must contain a certification that the facility or site complies with the SWP3 and this permit. The observation and evaluation report needs to be signed by personnel with signatory authority[24] and kept within the SWP3.

24. See 30 TAC Subsection 305.128

Notes

Dewatering Observation and Evaluation: Worksheets

Date of Observation and Evaluation:	**Personnel Name:**
Rate of Discharge Estimate: *Gallons per Day (GPD)*	**Personnel Title:**
Approximate Start: *Date and time*	**Approximate End:** *Date and time*

Observation and Evaluation Questions

Did you see any indications of pollutant discharge?

☐ **Yes (describe below)** ☐ **No**

_____

_____

_____

_____

_____

Did you see any erosion?

☐ **Yes (describe below)** ☐ **No**

_____

_____

_____

_____

_____

Did you see any instances of non-compliance?

☐ **Yes (describe below)** ☐ **No**

_____

Are existing BMPs properly and completely implemented?

☐ **Yes** ☐ **No (describe below)**

Do you recommend any corrective actions or additional control measures?

☐ **Yes (describe below)** ☐ **No**

List any other observations:

Certification Statement:

30 TAC 305.128 "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature: _____ Date: _____

Printed Name: _____

Notes

Inspections of All Controls: Instructions

TXR150000 Part III Section F.8

Inspect Pollution Controls

You must inspect areas of the construction site for evidence of, or potential for, pollutant discharge. If you are unable to perform the inspection because of adverse conditions, then please fill out the adverse conditions log sheet on page 69.

Requirements for inspections:

- Inspect pollution control measures and identify locations where new or modified stormwater controls are necessary.
- Check for signs of visible erosion and sedimentation.
- Identify any incidents of non-compliance.
- Inspect locations where vehicles enter or exit the site for off-site sediment tracking.
- If an inspection is performed when discharges from the site are occurring; identify all discharge points at the site and document the visual quality of discharge (i.e., color, odor, floating, settled, or suspended solids, foam, and oil sheen).

Inspection frequency options:

- Once every fourteen days and within 24 hours of the end of a storm event of 0.5 inches or greater.
- Once a month if areas of the site meet final stabilization or have been temporarily stabilized OR if there are frozen conditions at the site preventing runoff.
- Once a month if your site is in an arid, semi-arid, or drought-stricken area and within 24 hours after the end of a storm event of 0.5 inches or greater.
- Once every seven days regardless of a storm event.

Report Your Inspection Results

Your inspection report must be completed no later than 24-hours after the inspection. Include the date(s) of the inspection, the reason for the inspection, and any major observations. Major observations must include:

- Locations where erosion and discharges of sediment or other pollutants occurred.
- Locations needing BMP maintenance or additional BMPs.
- Locations where BMPs failed or are inadequate.

Describe any actions taken based on the inspection. If there are not any incidents of non-compliance, the report must contain a certification that the site complies with the SWP3 and TXR150000. The report must be retained as part of the SWP3 and signed by personnel with signatory authority.[25]

25. See 30 TAC Subsection 305.128

Notes

Inspection Plans and Procedures: Worksheet

Inspection Information:	Reason for Inspection:
Inspector Name:	☐ **14-day inspection**
Inspector Title:	☐ **Weekly inspection**
Inspection Date:	☐ **0.5 inch or greater rainfall event**
	☐ **Monthly inspection**

Inspection Questions:

Did you see any indications of pollutant discharge?

☐ **Yes (describe below)** ☐ **No**

_____

_____

_____

_____

Did you see any erosion?

☐ **Yes (describe below)** ☐ **No**

_____

_____

_____

_____

Did you see any instances of non-compliance?

☐ **Yes (describe below)** ☐ **No**

_____

_____

_____

_____

Are existing BMPs properly and completely implemented?

☐ **Yes** ☐ **No (describe below)**

_____

_____

_____

_____

Do you recommend any corrective actions or additional control measures?

☐ **Yes** ☐ **No (describe below)**

_____

_____

_____

_____

_____

_____

List any other observations:

_____

_____

_____

_____

Certification Statement:

30 TAC 305.128 "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Signature: _____ Date: _____

Printed Name: _____

Notes

Adverse Conditions: Instructions

TXR150000 Part III Section F.8.e

Document Adverse Conditions

Document any adverse conditions that cause a delay or suspension of inspections in your SWP3.

Adverse conditions are conditions that:

- Are dangerous to personnel (such as high wind or excessive lightning).
- Prohibit access to the site (such as flooding or freezing conditions).

Documentation must include:

- Date and time of adverse conditions.
- Names of personnel that witnessed the adverse condition.
- Description of the adverse condition.

Notes

Adverse Conditions: Log Sheet

Date:
Time:
Witness Name:

Description of adverse conditions:

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Samantha Bethke,
Print Name

President,
Title - Owner/President/Other

of Hays County WCID No. 2,
Corporation/Partnership/Entity Name

have authorized Lauren Barzilla
Print Name of Agent/Engineer

of Burgess & Niple
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

1/15/26
Date

THE STATE OF Texas §

County of Hays §

BEFORE ME, the undersigned authority, on this day personally appeared Samantha E. Bettke known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 15th day of January, _____.

NOTARY PUBLIC

Vicki Hahn
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 11/4/28

Vicki Hahn
Notary Public, State of Texas
Notary ID 7822635
My Commission Exp. 11/04/2028

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Hays County WCID No. 2 Pinnacle Park
Regulated Entity Location: Hays County, Texas
Name of Customer: Hays County Water Contorl & Improvement District No. 2
Contact Person: Lauren Barzilla, PE Phone: (512)432-1000
Customer Reference Number (if issued):CN 601363419
Regulated Entity Reference Number (if issued):RN 104710835

Austin Regional Office (3373)

☒ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☒ Austin Regional Office
☒ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☐ Recharge Zone ☒ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	89.59 Acres	$ 6,500
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 1/23/26

Application Fee Schedule

Texas Commission on Environmental Quality

Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN 601363419		**RN 104710835**

SECTION II: Customer Information

4. General Customer Information	**5. Effective Date for Customer Information Updates** (mm/dd/yyyy)	6/27/2002

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Hays County Water Control and Improvement District 2	

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
	32065120464		

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☒ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees

☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?

☐ **Yes** ☒ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator ☐ Other:
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant

15. Mailing Address:	Hays County WCID No. 2							
	600 W. 5th Street Suite 900							
	City	Austin	**State**	TX	**ZIP**	78701	**ZIP + 4**	

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	sbethke@hayswcid.org

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 686-1660		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Hays County WCID 2

23. Street Address of the Regulated Entity: *(No PO Boxes)*								
	City		State	TX	ZIP		ZIP + 4	
24. County								

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:			
26. Nearest City		State	Nearest ZIP Code

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:		30.1816	28. Longitude (W) In Decimal:		97.9950
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	10	54.02	97	59	42.08

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
4941		221310	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

34. Mailing Address:								
	City		State		ZIP		ZIP + 4	
35. E-Mail Address:								

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
( ) -		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Lauren Barzilla	**41. Title:**	PE

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 432-1000		**( ) -**	lauren.barzilla@burgessniple.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Burgess & Niple	**Job Title:**	District Engineer
Name *(In Print):*	Lauren Barzilla	**Phone:**	**(** 979 **)** 574- **0905**
Signature:		**Date:**	1/23/26